



## Publisher Registration (IM5)

**Company Name:** Carolina Biological Supply Company

**FEID / EIN:** 56-0364367

**Division:** Curriculum Division

**Status:** Active

**Address 1:** 2700 York Road

**City:** Burlington

**State:** North Carolina

**Zip / Postal Code:** 27215

**Country:** United States

## Questionnaire (IM8)

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

*Answer:* Dr. Hector R. Martin

Degree in Biology with specialization in Molecular Biology and PhD in Evolutionary Genetics, University of Barcelona.

Dr. Albert Romero

Degree in Biology with specialization in Botany and PhD in Plant Physiology, University of Barcelona.

Dr. Nora S. Oussedik

Degree in Physics at the University of Barcelona and PhD in Science Education at the Autonomous University of Barcelona.

Antoni Aules

Degree in Chemistry at the University of Barcelona.

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

*Answer:* Due to the flexibility and customizability of Science Bits, these materials are intended for science students of all levels of learning.

**1. List the Florida districts in which this program has been piloted in the last eighteen months.**

*Answer:* This program hasn't been piloted in Florida, although it has been approved for adoption (2017-2018)

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

*Answer:* All content is tagged to be searchable by the search engine of the Florida State Standards

**3. IDENTIFY AND DESCRIBE THE COMPONENTS OF THE MAJOR TOOL. The Major Tool is comprised of the items necessary to meet the standards and requirements of the category for which it is designed and submitted. As part of this section, include a description of the educational approach of the submission.**

**Educational Approach: (The information provided here will be used in the instructional materials catalog in the case of adoption of the program. Please limit your response to 500 words or less.)**

*Answer:* Science Bits is an internet learning program of multimedia science lessons that promotes the change from a transmission educational model to a constructivist one, based on inquiry, critical thinking, discovery and learning-by-doing. It was previously adopted in Florida in 2017-2018 and is fully aligned to the Florida State Standards.

All Science Bits lessons include interactive resources (such as videos, animations, lab simulators, 3D interactive models, etc.) and contain full teacher guides with suggestions, recommendations and best practices designed to help teachers implement three-dimensional learning in their classrooms.

**Major Tool – Student Components: Describe each of the components, including a format description.**

*Answer:* All lessons are designed to promote real understanding and engage students in science learning and represent a break from models of transmission and memorization. With Science Bits, students are encouraged to take responsibility and actively participate in learning.

**Major Tool – Teacher Components: Describe each of the components, including a format description.**

*Answer:* Science Bits's digital platform lets teachers create groups of students, assign content, schedule exams, monitor student progress, grade open-ended questions, amongst other standard features like a full teacher guide, answer key and auto grading questions. It also includes exclusive features designed by teachers for teachers like screen synchronization, ongoing formation assessment, tools to permit differentiation of content for different students or individual students, synchronization of content for lead teachers and teaching assistants and over 30 features that help teachers. One feature that teachers find especially useful is the possibility to create their own self grading assessments from Science Bits' huge bank of questions thus allowing them to invest more time with students giving feedback and guidance on their performance in the tests rather than spending time grading those tests.

The Engage and Explore sections are considered group activities, in which the teacher has a major role as the facilitator, while the students follow his/her indications on the front screen.

The Explain and Elaborate allow a lot of flexibility for each teacher to use either a guiding approach or letting students to autonomously advance through these sections, which include the

descriptions, concepts, terminology and exercises (Explain) and a project-based activity to put the newly acquired concepts into practice.

Finally, the Evaluate will assess student's competencies in each specific unit by means of an exam that focuses on the understanding of the concepts and how to apply them, rather than the simple memorization of facts.

#### **4. IDENTIFY AND DESCRIBE THE ANCILLARY MATERIALS. Briefly describe the ancillary materials and their relationship to the major tool.**

##### **Ancillary Materials – Student Components: Describe each of the components, including a format description.**

*Answer:* PRINT MATERIALS

Both teachers and students have access to a complementary printable PDF version of each of the 5E units included in Science Bits. These PDFs account for all the texts, video scripts and audios, as well as the exercises included.

These printable materials are designed for classrooms in which students do not have access to a screen/device each, and can be used together or separately from the teacher's projector or digital board, as a support material or homework. The PDF version is a useful back up for those students who may have limited access to a device or internet outside of school.

The physical version of Science Bits is bound according to the Florida standards, into purchasable textbooks that include the units in the standardized order.

##### **HANDS ON INVESTIGATION KITS**

Carolina Biological will offer for purchase a hands on investigations in the form of pre-packaged science kits comprised of multiple investigations that are led by teachers and conducted by students. These 'Carolina Essentials Florida Edition' kits will include materials and supplies to support groups of students conducting hands on labs that complement and extend the online "Science Bits" Major Tool. The kits will be available in single and five-use configurations.

##### **Ancillary Materials – Teacher Components: Describe each of the components, including a format description.**

*Answer:* PRINT MATERIALS

Both teachers and students have access to a complementary printable PDF version of each of the 5E units included in Science Bits. These PDFs account for all the texts, video scripts and audios, as well as the exercises included.

These printable materials are designed for classrooms in which students do not have access to a screen/device each, and can be used together or separately from the teacher's projector or digital board, as a support material or homework. The PDF version is a useful back up for those students who may have limited access to a device or internet outside of school.

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**5. Identify which industry standard protocols are utilized for interoperability?**

*Answer:* Any standard LTI compatible LMS, OneRoster, Marsupial, Google Classroom, Google SSO, Microsoft Teams etc.

**6. HOW MUCH INSTRUCTIONAL TIME IS NEEDED FOR THE SUCCESSFUL IMPLEMENTATION OF THIS PROGRAM? Identify and explain the suggested instructional time for this submission. If a series, state the suggested time for each level. The goal is to determine whether the amount of content is suitable to the length of the course for which it is submitted.**

*Answer:* Typically, a teacher can start to use Science Bits after an initial one-hour basic training. It is designed to add value to both experienced teachers as well as substitute teachers or teachers who have no specific experience teaching science. All the materials and tools needed are included in the platform.

The most successful implementations require a minimum of two one-hour training sessions annually.

- Basic training or a Platform Refresh (for new users, recommended for all)

This hour of training is designed to let teachers "hit the ground running" and introduces the main features they need to start using Science Bits in class with students and gives an overview of best practices.

- Advanced training (for teachers after one to two weeks use of Science Bits)

This hour of training shows the more advanced features like creating exams, adding external content, how to differentiate content for students etc.

Outlines of the training are available on request.

**7. WHAT PROFESSIONAL DEVELOPMENT IS AVAILABLE? Describe the ongoing learning opportunities available to teachers and other education personnel that will be delivered through their schools and districts as well as the training/in-service available directly from the publisher for successful implementation of the program. Also provide details of the type of training/in-service available and how it may be obtained. (The information provided here will be used in the instructional materials catalog in the case of adoption of the program.)**

*Answer:* Professional Development (training) is provided as a 1/2 day (2-3 hour session) and is free of charge for orders of \$20k or greater. An additional follow up 1/2 day session (2-3 hours) can also be provided as either an online, or in person, session at the District's discretion.

**8. WHAT HARDWARE/EQUIPMENT IS REQUIRED? List and describe the hardware/equipment needed to implement the submission in the classroom. REMEMBER: Florida law does not allow hardware/equipment to be included on the bid! However, schools and districts must be made aware of the hardware/equipment needed to fully implement this program.**

*Answer:* For the best experience, we recommend that all students have devices and that the school be equipped with a front-class projector or digital board connected to the internet.

Science Bits is an HTML5 web-based solution which means that it will run on any internet enabled device and no specific hardware or software is required. For optimized browsing performance we recommend using the latest version of Google Chrome, for Windows, Mac, and Android users. For iOS, the recommended browser is Safari.

All you need to get started is a computer, chromebook or tablet with an Internet connection

(Science Bits also works on smartphones but we recommend using devices with at least an 8-inch screen to easily work with the simulators).

Computer requirements

- Windows, Linux or Mac OS
- An up-to-date version of Chrome, Firefox, Safari, Edge, or Internet Explorer 11
- A minimum of 256 MB installed RAM
- A minimum resolution of 1024x768 with 32-bit color depth

Many resources in Science Bits (videos, etc.) include audio, so you will need a sound card and speakers (or headphones).

Some printable resources require a PDF viewer, which is usually installed on your computer or included in your browser. If not, you can download Adobe Reader for free.

An Internet connection speed of at least 128Kbps is recommended. If you want to connect via a proxy device, it must obey the HTTP/1.1 protocol, including all caching and anti-caching directives

**9. WHAT LICENSING POLICIES AND/OR AGREEMENTS APPLY? If software is being submitted, please attach a copy of the company's licensing policies and/or agreements.**

*Answer:* The licensing policies are available to the public at: <http://www.science-bits.com/en/> (bottom of the page, Terms of Use).

**10. WHAT STATES HAVE ADOPTED THE SUBMISSION? List some of the states in which this submission is currently adopted.**

*Answer:* Science Bits has been adopted by Florida (2017-2018), California (under the name Smart NGSS), New Mexico and is currently in the process of adoption in Texas

**11. WHAT OPEN EDUCATIONAL RESOURCES RELATED TO THIS BID DO YOU MAKE AVAILABLE(S)? List and describe each of the components, including a format description. (Open Educational Resources (OER) are high-quality, openly licensed, online educational materials that offer an extraordinary opportunity for people everywhere to share, use, and reuse knowledge.)**

*Answer:* None.

**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?**

*Answer:* No, given this is a middle school, 6-8th grade curriculum.

**13. What, if any, foreign language translations do you have available?**

*Answer:* All content, including text and audio is available simultaneously in English and Spanish, in both the digital and printable versions. Users can switch from one language to the other with one single button at any time. Teachers can also control the languages students should view.

**14. Do you provide access point scaffolding or an access point correlation upon request?**

*Answer:* All materials are constructivist with a low entry point, allowing students to see science through contextualization. All 5E units begin with a simple Are You Ready? activity to help the teacher gauge previous experience and understand the level of student awareness, knowledge, and interest in topics. From there, the teacher offers the Engage lesson which is a short video that takes something familiar to the student (taken from everyday life, like going to the supermarket in Mass, Volume, and Density) and then poses a question that the students may not immediately know the answer to. Students are encouraged to discuss and - as with the Explore lesson - there are no right or wrong answers, we encourage students to engage with and explore the material and use their reasoning and share ideas. Additionally, the way Science Bits is constructed means

that the APs are found in the Engage and Explore lessons which are interactive and have very reduced text and vocabulary requirements. From the first lessons of Engage and Explore, Science Bits in the Explain lessons becomes more educational but turns the idea of transmission based education on its head: a text book starts with the formula and then tries to explain what it means but Science Bits shows students step by step all of the pieces so that they can put them together and then – once they have already mastered the concepts needed, shows them the formula. The rationale behind this is simple: if you complete well thought out exercises to derive and construct any formula organically and then see the scientific formula, it will make more sense and be easier to remember, recall and reconstruct. The team who worked on Science Bits pedagogical strategy includes neuroscientists and experts in education (the creator of the 5E Method, Dr Rodger Bybee acted as an advisor).

Teachers also are provided with tools to tailor all lessons for their students as different groups or at an individual level. There are many ways to adapt content easily according to student needs using the differentiation tools embedded in Science Bits.

One small but important feature is that teachers and districts can use the gradebook to encourage participation during 6th and 7th grade by give high value to participation in the Engage and Explore lessons. Experience shows that students who participate and are encouraged will improve. Science Bits has been used in multiple schools for students with severe educational issues and many of the features explained above have been suggested by those schools. For example, students with communicative difficulties may find it daunting to start with Engage, and schools with these students prefer to begin with Explore. Science Bits is designed to let teachers reconfigure the students' experience as needed and on the fly. For that reason, we offer full support for Access Point Scaffolding throughout Science Bits. Science Bits has prioritized tools that permit teachers full control over the student experience as we understand each student has different needs that may change so we empower teachers with the right curriculum and tools.

**15. ESSA LEVELS OF EVIDENCE: To be considered an evidence-based program (or practice), it is required to have evidence to show that the program is in fact effective at producing results and improving outcomes in reading when implemented. Identification of evidence level alignment, Levels 1-4 (as outlined in the specifications), for the entirety of the program, part of the program, or individual practices within the program is required. Please explain how your product meets these requirements.**

*Answer:* Science Bits has been shown to give a statistically significantly positive effect, in peer reviewed long-term scientific studies with more than 350 students and more than two educational sites.

The study was published in the International Journal of Science Education and is available summarized here:

<https://science-teaching.org/en/research/new-scientific-study-supports-effectiveness-of-science-bits>

The full original study is available here:

<https://www.tandfonline.com/doi/full/10.1080/09500693.2021.1918354>

- Researchers analyzed the short and long-term conceptual learning of students from two schools that adopted the Science Bits program in their science classes and compared it to two schools that used other methods.
- Results show that the students from the schools that adopted the Science Bits program and its 5E

instructional model improved their conceptual learning in a relevant and sustained way, while the schools in the control group did not undergo any changes over the 5 years of the study.

725 students were followed over a 5 year period.

## Bid Materials & Links (IM4)

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**Item (ISBN):**

FLDOE 2024 Digital Grade 6; online version of Science Bits Student Edition (1 Year) (978-1-4350-3068-8)

**Type:** Major Tool (Priced)

**Format:** Internet Based

**Price:** 14.95 \$

**Free Symbol:**

**Terms:**

**Package:**

**Author:** Learning Bits, Inc.

**Sample Link:**

**Special Instructions Link:**

**Student Edition Link:**

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**Item (ISBN):**

FLDOE 2024 Digital Grade 6; online version of Science Bits Student Edition (5 Year) (978-1-4350-3071-8)

**Type:** Major Tool (Priced)

**Format:** Internet Based

**Price:** 74.75 \$

**Free Symbol:**

**Terms:**

**Package:**

**Author:** Learning Bits, Inc.

**Sample Link:**

**Special Instructions Link:**

**Student Edition Link:**

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**Item (ISBN):**

FLDOE 2024 TG Grade 6; Print version of Science Bits Teacher Guide (978-1-4350-3038-1)

**Type:** Ancillary (Priced)

**Format:** Teacher's Edition

**Price:** 295 \$

**Free Symbol:**

**Terms:**