



Science Check-up! TEXAS

English/Spanish Edition

Teacher's Guide

GRADE
6-8

INTERACTIVE LEARNING ONLINE



Science Check-up **Texas**

Grade 6-8

Teacher's Guide

English/Spanish Edition

STEM-Smart

Science Check-up Team

Authors

James A. Shymansky
B.S. Physics Education, M.S. Physics, Ph.D. Science Education

John A. Dunkhase, B.S. Geology, Ph.D. Geochemistry

Kevin E. Koepnick
B.S. General Science, M.S. Science Education

Matthew J. Harding
B.A. Physics Education, M.A. Science Education

John Craven
B.S. Education, B.S. Animal Science, M.S. Geology, Ph.D. Science Education

Production

Senior Editor
Julie Shymansky

Technical Editor
Brock Shymansky

Photography/Videography
Teresa Shymansky

Design Editor
Malachi Rocca

Art Design
Kimberlee Rocca

Programming Director
Raina Conde

Copyright © Interactive Learning Online, LLC, Publisher 2023

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage or retrieval system without permission in writing from the publisher.

Interactive Learning Online, LLC. 2598 Quincy Road, NE, Solon, IA 52333. USA

REVIEWERS

Len Annetta, Taft Distinguished Professor of Science Education, East Carolina University
Craig Berg, Professor of Science Education, University of Wisconsin-Milwaukee
Paul Burrage, Elementary Teacher, Palm Beach County, Florida
Jenn Chidsey, Managing Director of Learning and Impact, Austin Texas
Charlene Czerniak, Professor of Science Education, University of Toledo
Pradeep Dass, Professor of Science Education, Northern Arizona University
Carmen Fies, Associate Professor of Science Education, University of Texas-San Antonio
Maureen Funk, Science Consultant, Princeton, Missouri
Tracy Hogan, Associate Professor of Science Education, Adelphi University
Andrew Miller, Curriculum Coordinator, Normandy Schools Collaborative, Missouri
Eric Olson, Associate Professor of Science Education, State University of New York-Oswego
Joanne Olson, Professor of Science Education, Texas A&M University
Regina Peter, Director, Newmark Schools, Scotch Plains, New Jersey
Nancy Romance, Professor of Science Education, Florida Atlantic University
Jan Rutt, Elementary/Middle School Teacher, Columbus Junction, Iowa
Tom Salinsky, Elementary Science Coordinator, Palm Beach County, Florida
Sherry Southerland, Professor of Science Education, Florida State University
John Tillotson, Associate Professor of Science Education, Syracuse University
Pete Veronesi, Professor of Science Education, State University of New York-Brockport

Science Check-up: Texas

Grade 6-8

About Science Check-up

* *Science Check-up: Texas* Grade 6-8 is an online supplement that focuses on the big ideas outlined in the Grade 6-8 *Texas Essential Knowledge and Skills (TEKS)* that upper elementary students encounter in their curriculum. It is designed to help students better understand the science content learned and to prepare for tests.

*Questions in the reviews feature immediate feedback for students, opportunities to *go back* and answer questions until they get them right, and a report, “*How did I do?*”

*Teachers can generate single unit and all-unit tests on key science content and see tables of analytics and pie charts of responses on all questions in the reviews and tests to facilitate further instruction as needed.

*Teachers have total control of student access to *Science Check-up* reviews. Individually assigned usernames and passwords allow students to access only those reviews enabled by the teacher. Teachers can select reviews by simply highlighting and clicking on the reviews listed in the settings on their teacher *dashboard* for each science unit.

Dual languages

**Science Check-up* can be read in English or Spanish with a simple click of the *EN/SP* language buttons in the tool bar. Second language learners can use a built-in translation function to see and hear all text in both Spanish and English, enhancing both their science content knowledge and their language skills.

How to use *Science Check-up*

*The science content and questions in the *Science Check-up* reviews are intended to deepen understanding of the content and to give students that extra boost in confidence that they have learned what is needed to do their best on tests. Eighth grade teachers will find *Science Check-up* an especially useful tool for helping students prepare for the tests given at the end of Grade 8, but 6th and 7th grade teachers can also use selected reviews to capitalize on the power and fun of *Science Check-up* and to lessen the burden on 8th grade teachers to prepare for the tests at the end of eighth grade. The best way to use *Science Check-up* is for the Grade 6-8 teachers to plan together and select reviews that align with the topics they are teaching at their grade. The table on the following page shows the alignment of the NGSS and suggested *Science Check-up* reviews.

Science Check-up works!!

Analyses of pilot study scores of 2,000 students using *Science Check-Up* showed an average gain of 22% in the number of students classified as proficient or advanced on their state science test!

Science Check-up/ Grade 6-8 TEKS Alignment

Category	Suggested Reviews
Unit 1: Matter and Energy	
The student will demonstrate an understanding of the properties of matter and energy and their interactions (8.5, 7.5, 6.6)	Review 1: Structure of matter Review 2: Special properties of matter Review 3: Chemical and physical changes
Unit 2: Force, Motion and Energy	Suggested Reviews
The student will demonstrate an understanding of force, motion, and energy and their relationships (8.6, 6.8, 6.9)	Review 1: What is motion? Review 2: Speed, velocity and acceleration Review 3: It takes a force! Review 4: How much force is needed? Review 5: Forces always come in pairs Review 6: Two basic kinds of energy Review 7: Energy can change forms Review 8: Energy in living systems
Unit 3: Earth and Space	Suggested Reviews
The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems (8.7, 8.8, 8.9, 8.10, 7.8, 6.11)	Review 1: Earth in motion Review 2: The moon and us Review 3: The nature of the universe Review 4: About our sun Review 5: Our dynamic Earth Review 6: Our changing landscape Review 7: Our heat engine—the sun! Review 8: How weather works Review 9: Water is critical
Unit 4: Organisms and Environments	Suggested Reviews
The student will demonstrate an understanding of the structures and functions of living systems and their interdependence on each other and on their environment (8.11, 7.10, 7.11, 7.12, 7.14, 6.12)	Review 1: Cellular life Review 2: Body systems Review 3: Inherited traits Review 4: Predicting traits Review 5: Heredity Review 6: DNA and Heredity Review 7: Selection Review 8: Natural selection Review 9: Adaptation Review 10: Life evolves Review 11: Plant life Review 12: Biodiversity Review 13: Interactions
*Unit 5: Scientific Investigation and Reasoning	Suggested Reviews
Safe practices with tools and equipment, design, conduct and report simple experiments that require data collection and analysis and critical thinking (8.1, 8.2, 8.3, 8.4)	Review 1: Science is systematic Review 2: Best explanation Review 3: Scientific theories

*Not a separate reporting category. Reviews provide examples of scientific investigation and reasoning in context.

Using Science Check-up: The Teacher Dashboard

Getting Started

Step 1. Login at <http://stem-smart.com/tx-m/login.php> and enter the temporary username and password assigned to you. Any browser will work, but STEM-Smart is designed to work specifically on Chrome to best utilize all the STEM-Smart language features.

Step 2. After logging in, your temporary username and password will take you to your “Let’s Get Started” page. On this page you may change your username and password if you wish. Be sure to write your username and password where you can find it.

Step 3. The “next” button will take you to your *teacher dashboard* where you can control everything. Students can only see and do the units and reviews that you have “enabled” and see and take unit test and all-unit tests AFTER you have “enabled” (opened and closed) them as well. You may make changes in things enabled at any time, but students must be logged-out and log back in to see the changes you’ve made.

Step 4. You can access all student accounts by clicking the **Student Accounts** tab in the toolbar at the upper right of your teacher dashboard. The following screen shot shows list of students assigned.

Step 5. When students log in for the first time, they will be asked to update their name, username and password, but that’s all optional. Clicking on **Manage Account** allows you to reset student usernames and passwords to be those assigned by the school or in case a student forgets his or her username and password.

#	Student Name	Login Details	All Unit Test	Unit 1: Nature of science	Unit 2: Earth and Space Science	Unit 3: Physical Science	Unit 4: Life Science
1	Gerlach, Helmer	Username: UsernameChanged Manage Account	No results	No results No QC results No results	No results No QC results No results	No results No QC results No results	No results No QC results No results
2	Feeney, Annamaria	Username: AnnamariaFeeney Manage Account	No results	No results No QC results No results	No results No QC results No results	No results No QC results No results	No results No QC results No results

Step 6: STEM-Smart can be read in English and Spanish. The **Edit Language** link on home page tool bar allows you to select the text language for the reviews. If both languages are enabled, students can toggle between English and Spanish by clicking the EN or SP button at the top right of their screen. You may also choose to enable only one of the languages as well.

Language Settings

Enable	Languages	Default
<input checked="" type="checkbox"/> Enabled	English	<input checked="" type="radio"/> Set as default
<input type="checkbox"/> Disabled	Spanish	<input type="radio"/> Set as default

[Save Changes](#) [Cancel](#)

Deciding what students will see

On the home page you can open and close any or all of the STEM-Smart units, open and close any or all of the reviews within a unit, generate individual unit and/or all-unit tests, and view student responses to the *Quick Checks* in the reviews and to the tests that you’ve generated.

A. Selecting a unit and enabling or disabling reviews in a unit

Step 1: Click the **Settings** button under one or more of the units. Below is what you will see for Unit 1 when the settings link is clicked. The sample screen that follows shows that two of the unit reviews have been enabled and will be open for student access. The default for all reviews in all units is “Disable All.”

Teacher Dashboard

SECTIONS

ALL UNIT TEST

UNIT 1: MATTER AND ENERGY

Matter and Energy

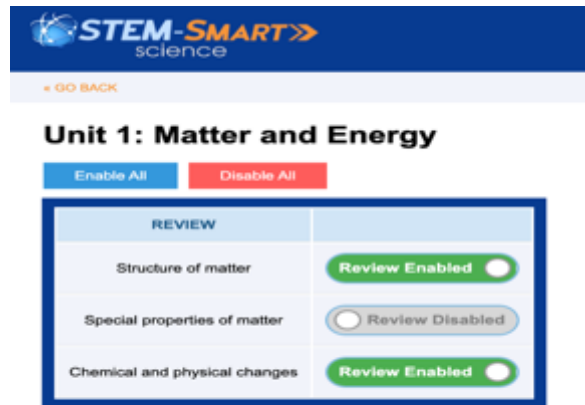
[Settings](#)

ACTIONS

[View All Unit Test](#)

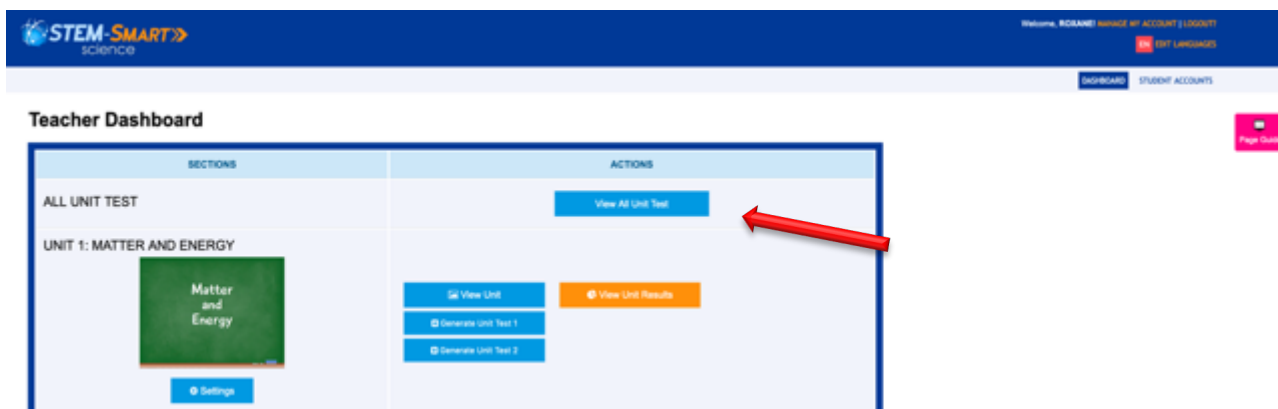
[View Unit](#) [View Unit Results](#)

[Generate Unit Test 1](#) [Generate Unit Test 2](#)

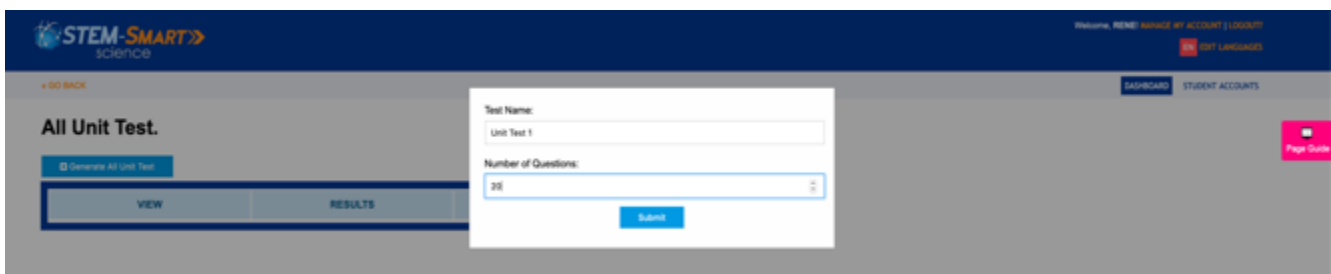


B. Generating All-Unit Tests

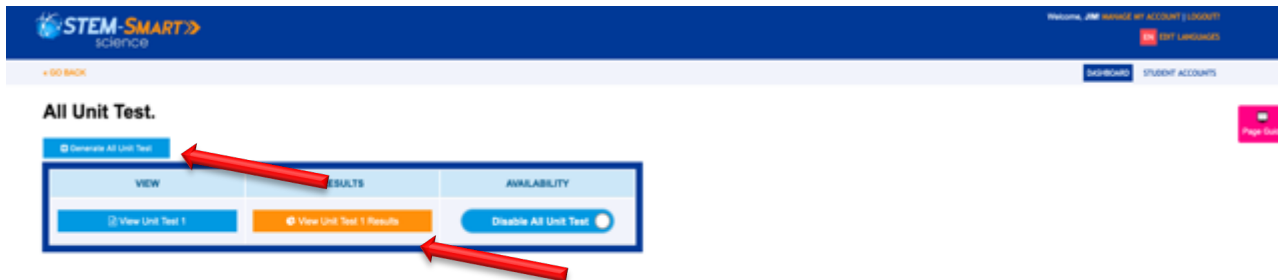
Step 1: Clicking on the **View All-Unit Test** allows you to create multiple tests of randomly selected items from the test item pools for each unit.



Step 2: When you click on **View All Unit Test**, you will be asked to provide a name for the test and input the number of questions for the test. The screen shot below shows the teacher generating a test of 20 items. You may generate as many different tests as you like.



*After creating an all-unit test, you have the option to *view the test*, *enable or disable the test* and *view the test results* after students have completed the test. Clicking the “Generate All Unit Test” again allows you to generate another version of the test with a new set of randomly selected items.




Step 3: Clicking on the **View Test Results** tab shows a matrix of students' scores on the all-unit tests generated. The rows in the matrix show the percent of correct responses across all items by individual **Student Name** and the **columns** show the percent of correct responses by all student on each item.

STUDENT NAME	Q#1	Q#2	Q#3	Q#4	Q#5	Q#6	Q#7	Q#8	Q#9	Q#10	TOTAL %
Boier, Dahlia	-	-	-	-	-	-	-	-	-	-	0%
Dare, Lora	-	-	-	-	-	-	-	-	-	-	0%
Kilback, Baylee	-	-	-	-	-	-	-	-	-	-	0%
Ortiz, Astrid	-	-	-	-	-	-	-	-	-	-	0%
Ortiz, Olga	-	-	-	-	-	-	-	-	-	-	0%
Total (5)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Step 4: Clicking on the item number heading (e.g., "Q#1"), shows a copy of the test item and correct response and generates a pie chart showing the distribution of students' responses to the item.


Question #1

Use the pull down menu to indicate whether the object is experiencing balanced or unbalanced forces.




A ferry slows down as it approaches a dock.

Unbalanced




A basketball arcs towards the hoop.

Unbalanced



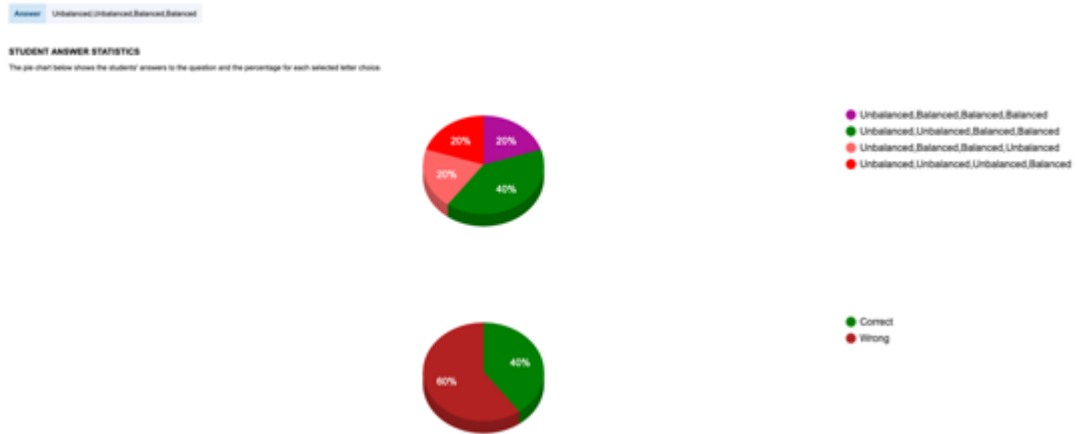
A hockey puck slides across the ice at a constant speed.

Balanced



A red rock sits motionless atop some other rocks.

Balanced



C. Managing the Units

Step 1: Clicking on the **Generate Unit Test** tabs on your dashboard allows you to create up to **two** tests of randomly selected items for that unit. As with the all-unit test, you will be asked to select the number of items.



Step 2: After creating a unit test, you have the option to view the unit itself, view the unit tests, view the unit test results, and enable (or disable) the tests.



Step 3: After students have finished a unit and it has been disabled (closed), clicking on **View Unit Results**, takes you to **Student Unit Results** screen that are the same as the “all unit” tests (See Section B.4 above).

STEM-SMART science Welcome, SCOTTY! MANAGE MY ACCOUNT | LOGOUT! EDIT LANGUAGES

GO BACK DASHBOARD STUDENT ACCOUNTS

Student Unit Results

NOTE:

- Click the column header to view the statistics for each question.
- If the table is not displaying correctly, please refresh this page.
- Scroll left and right, and up and down, to view all your students' data.

Unit Unit Test 1 Results Unit Test 2 Results

UNIT TEST RESULTS

STUDENT NAME	Q#1	Q#2	Q#3	Q#4	Q#5	TOTAL %
Beahan, Baby		—	—	—	—	0%

D. Translation and Audio Features

*Full text translation: Students can toggle at any time between English and Spanish by clicking on the “Select Language” tab.

Review 1: Structure of matter

There are 103 different elements known to man! Some of them are common and familiar to you - like oxygen or carbon or iron. Some of them are rare - like gold or platinum or uranium. And some are really! really! rare - like neodymium - yeah - that's hard to pronounce (knee-oh-dim-eee-um!).

Atoms are the smallest particle or “building block” that makes up an element. Atoms are made up of **protons** and **neutrons** in the nucleus - or center of the atom - and **electrons** that orbit around the nucleus like a cloud. Protons have a positive charge; electrons have a negative charge; and neutrons have no charge. Pure elements are made up of just one kind of atom that has a specific number of protons in the nucleus.

Examen 1: Estructura de la materia

¡Hay 103 elementos diferentes conocidos por el hombre! Algunos de ellos son comunes y familiares para usted, como el oxígeno, el carbono o el hierro. Algunos de ellos son raros, como el oro, el platino o el uranio. Y algunos son realmente ¡raros!, como el neodimio, sí, eso es difícil de pronunciar (ne - o - di - mí - o).

Los **átomos** son la partícula más pequeña o “bloque de construcción” que constituye un elemento. Los átomos están formados por **protones** y **neutrones** en el núcleo, o centro del átomo, y **electrones** que orbitan alrededor del núcleo como una nube. Los protones tienen una carga positiva, los electrones tienen una carga negativa, y los neutrones no tienen carga. Los elementos puros están formados por un solo tipo de átomo que tiene un número específico de protones en el núcleo.

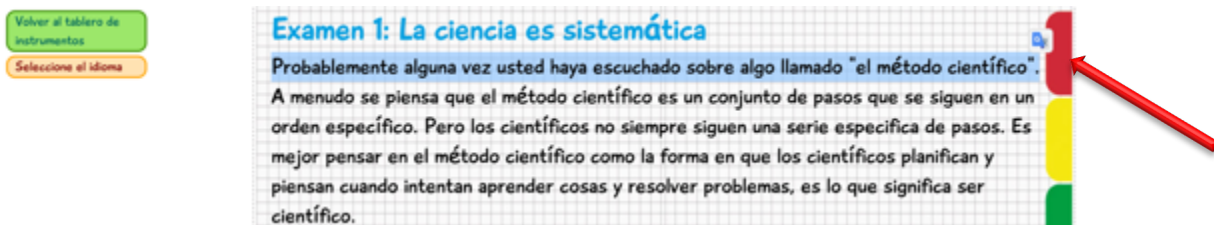
*Specific text audio and translation: If a student wants to see or hear a translation of only a single word, sentence or section of Spanish text, the “Google Translate” plugin needs to be added to their browser at:

<https://chrome.google.com/webstore/detail/google-translate/aapbdbdomjkkjkaonfhkkikfgjllcleb?hl=en>

After it has been added a Google Translate icon will appear in the toolbar.



Step 1: The translation can be done by highlighting a word, a sentence or a section of text on the Spanish screen. Then find and click on the Google Translate icon near the highlighted word or sentence(s).



Step 2: Clicking on the translation icon will produce a box that contains the word or sentence(s) in English and Spanish. Clicking on the “speaker” icons in the box will produce audios of both translations.

