Introduction

Curriculum Overview

Welcome! The first part of your Texas Tech University K-12 Kindergarten Science Curriculum will provide you and your student with opportunities to learn about the nature of science, which is scientific investigation and reasoning. Your student will be learning about scientific methods and tools with an engaging curriculum similar to what you would find in the classrooms of some of the most outstanding teachers in our nation. During this semester, the student will also explore matter and different sources of energy. We will end our semester with lessons about motion with many engaging activities to appeal to your student.

In order for the student to have an ongoing record of what he or she is learning, there will be some lessons that instruct you to have the student record answers or complete a project in his or her Science Journal. This will serve as a review throughout the year and provide a place for your student to revisit previous lessons. This journal should be a wide-ruled spiral notebook with approximately 80 pages.

Before beginning the curriculum, please take a few minutes and look through the text, ***Texas Science Fusion*** at www-k6.thinkcentral.com. Your student will use this digital text for all assignments and independent practice.

This course is completed entirely online in Blackboard using the PDF **Unit Lessons** and **Worksheets** documents, along with the digital textbook.

Vocabulary

Throughout the lessons, you will notice important vocabulary words in **bold print** to prompt you to emphasize these words in your lessons. As young children learn about science, it is important for them to use the correct vocabulary to describe their processes and observations. This vocabulary will act as the foundation for all future science instruction.

Kindergarten Science

Kindergarten students are naturally curious about the world around them and are constantly interacting with their environment. This 75-day curriculum engages kindergarten students to become scientists as they observe, compare and contrast, ask questions, design experiments, and discover answers about the world around them.

We begin our journey by learning to use our five senses to explore and gather information about the world around us. We will use basic science skills such as classifying and sorting as we learn to safely investigate and use technology to perform science experiments.

Course Objectives

The Texas Essential Knowledge and Skills (TEKS) require that, at the end of this course, the student should be able to do all of the following:

1. Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices. The student is expected to:
   A. identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately;
   B. discuss the importance of safe practices to keep self and others safe and healthy; and
   C. demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reusing or recycling paper, plastic, and metal.

2. Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. The student is expected to:
   A. ask questions about organisms, objects, and events observed in the natural world;
   B. plan and conduct simple descriptive investigations such as ways objects move;
   C. collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools;
   D. record and organize data and observations using pictures, numbers, and words; and
   E. communicate observations with others about simple descriptive investigations.

3. Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving. The student is expected to:
   A. identify and explain a problem such as the impact of littering on the playground and propose a solution in his or her own words;
   B. make predictions based on observable patterns in nature such as the shapes of leaves; and
   C. explore that scientists investigate different things in the natural world and use tools to help in their investigations.

4. Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world. The student is expected to:
   A. collect information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices, including clocks and timers; non-standard measuring items such as paper clips and clothespins; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as terrariums and aquariums; and

B. use senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.

5. Matter and energy. The student knows that objects have properties and patterns. The student is expected to:

   A. observe and record properties of objects, including relative size and mass, such as bigger or smaller and heavier or lighter, shape, color, and texture; and

   B. observe, record, and discuss how materials can be changed by heating or cooling.

6. Force, motion, and energy. The student knows that energy, force, and motion are related and are a part of their everyday life. The student is expected to:

   A. use the five senses to explore different forms of energy such as light, heat, and sound;

   B. explore interactions between magnets and various materials;

   C. observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside; and

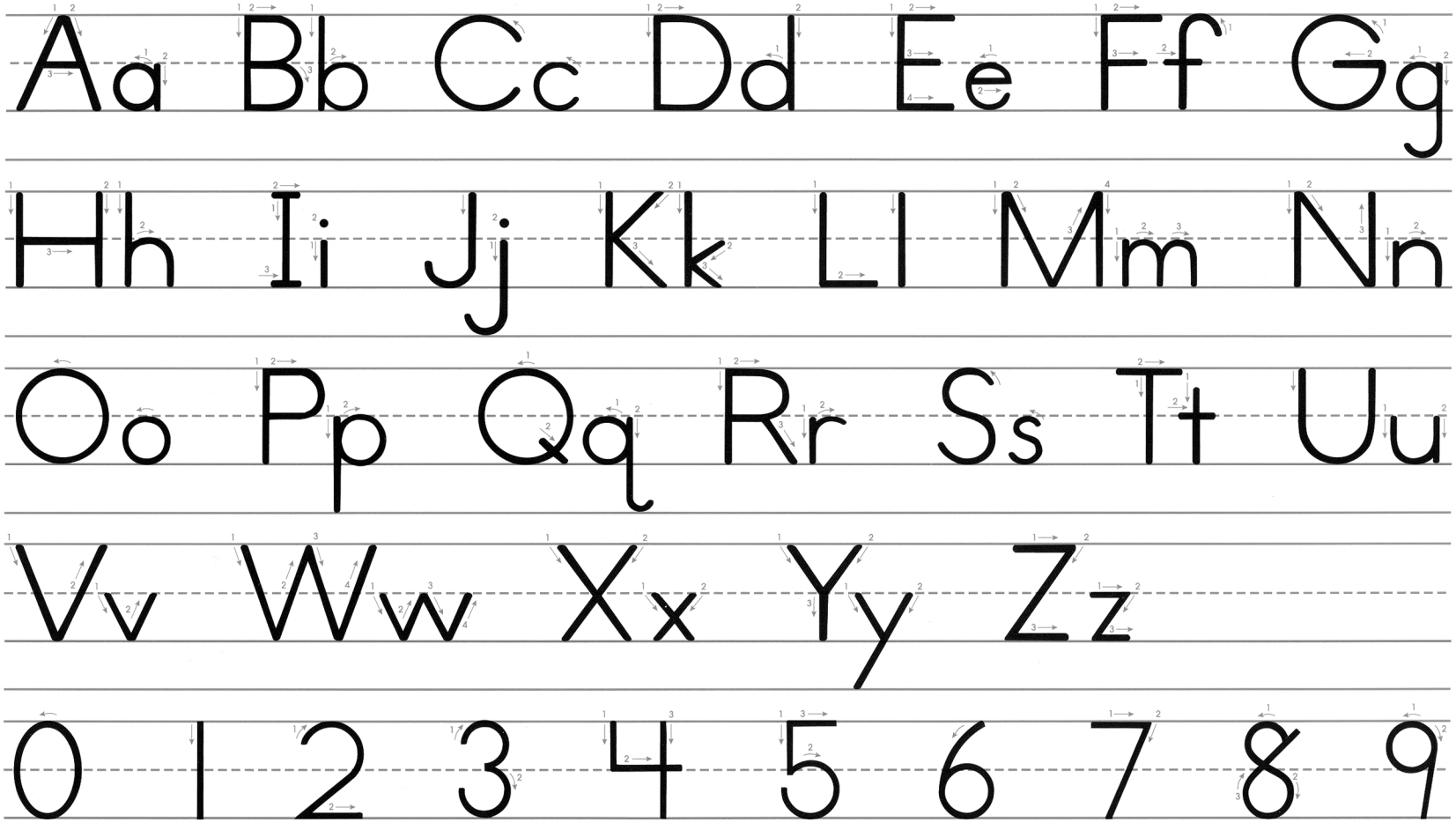
   D. observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.

Source: The provisions of this §112.11 adopted to be effective August 4, 2009, 34 TexReg 5063.

Handwriting

Handwriting is taught in the Language Arts course. However, good handwriting skills are necessary in all subjects including science. In Kindergarten, Grade 1, and Grade 2, manuscript is the preferred technique. When teaching your child handwriting, please consider the appropriate letter formation and spacing. Please refer to the manuscript chart included on the next page to assist you in appropriately teaching your child handwriting. Please reinforce the importance of good handwriting in all subject areas.

Traditional Manuscript



Books and Materials for SCI K this Semester

Textbook

- *Texas Science Fusion* (Student Edition). (2015). Houghton Mifflin Harcourt. ISBN 9780544067820 (digital)
- *Texas Science Fusion* (Write-in Student Edition). (2015). Houghton Mifflin Harcourt. ISBN 978-0-544-02545-5 (print)

Other Required Books

These books can be purchased from any book vendor or borrowed from your public library.

Unit 1

- Aliki, *My Five Senses*
- Blevins, *You Can Use a Magnifying Glass (Rookie Read-About Science)*
- Bullock, *You Can Use a Balance (Rookie Read-About Science)*
- Garrett, *Scientists Ask Questions (Rookie Read-About Science)*
- Reid, *The Button Box*
- Showers, *Where Does the Garbage Go? (Let's Read and Find Out)*
- Trumbauer, *What is a Thermometer? (Rookie Read-About Science)*

Unit 2

- Berger, *Sound, Heat, and Light: Energy at Work*
- Boothroyd, *Vibrations Make Sound*
- Curry, *What is Matter? (Rookie Read-About Science)*
- Lindeen, *Solids, Liquids, and Gases*
- Rosinsky, *Light: Shadows, Mirrors, and Rainbows*
- Schofield-Morrison, *I Got the Rhythm*
- Seuss, *Green Eggs and Ham*
- Trumbauer, *All About Heat (Rookie Read-About Science)*

Unit 3

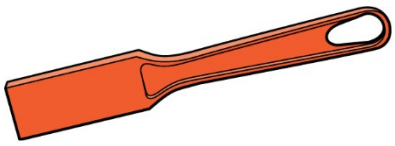
- Rosinsky, *Magnets: Pulling Together, Pushing Apart (Amazing Science)*
- Fowler, *What Magnets Can Do (Rookie Read-About Science)*

- Hutchins, *Rosie's Walk*
- Berenstain, *Bears in the Night*
- Stille, *Motion: Push and Pull, Fast and Slow (Amazing Science)*
- Murphy, *Push and Pull (Rookie Read-About Science)*
- Martin, *Up and Down on the Merry-Go-Round*
- Schrier, *Fast as a Cheetah, Slow as a Sloth (Reading Essentials: Discovering Science)*
- Awdry, *Fast Train, Slow Train (Thomas & Friends)*

Materials

- apple
- balance scale
- balloons, 5–8
- basket
- blocks, 2 flat (e.g., shape blocks), 2 rectangular (wood or plastic)
- bobby pin
- bolts
- bowl
- brick
- bucket, plastic, 2-gallon
- building blocks: wood, plastic, or foam, larger than LEGO® bricks
- building toys such as LEGO® bricks
- butter, 1 tablespoon
- buttons, 25, a variety of colors and styles
- card stock, white
- cardboard boxes of different sizes: empty cereal boxes, shoe boxes, etc.
- chocolate milk, cold, 1 cup or glass
- clay
- coins, 10
- color pictures of a cow, a bear, a deer, a dog, a duck, and an owl from magazine or Internet
- containers for water: one tall and narrow (like a vase), one low and wide (like a food storage container)
- containers, 4 to 6, different-sizes such as 1/4-cup dry measuring cup, empty medicine containers, small storage containers, etc.
- cotton balls
- crayons

- cups, clear plastic or paper, 4
- digital camera or smartphone
- digital thermometer (optional)
- eggs
- erasers
- familiar toy such as a small car or doll
- flashlight
- freezer
- glue or glue stick
- gum, 1 stick
- hairdryer
- hand lens
- hole punch
- ice
- ice cube trays or popsicle molds
- index cards, 3” × 5”
- jars or clear plastic containers, 1-cup capacity, 2
- juice, 1 bottle
- keys
- kitchen utensils: large cooking spoon, measuring spoons, butter knife, fork
- knife
- lamp, gooseneck
- leaves, 10, different sizes and shapes
- lip balm, scented
- magazines or Internet graphics (optional)
- magnets: horseshoe, wand



- magnetic objects, small
- magnetic tape, 3”
- marbles, 5
- markers: black, red, and green
- measurement manipulatives: coins, cubes, marshmallows, other small objects
- measuring cup, clear, 1-2 cups with lines to show increments of lesser amounts
- meat thermometer (optional)

- microwave or stove (optional)
- music, Beethoven's Symphony No. 5
- nails
- nuts
- orange
- paint-stirring stick
- pan
- paper plates, 4
- paper towels
- paper: chart, construction paper (dark red or dark blue; 4 sheets of 12" × 18" white), drawing, wide-ruled notebook, plain white
- paperclips, small, 1 box
- paper-towel rolls, empty, 5
- party favor toys (blowout noisemaker, top, clackers, Slinky®, etc.)

- pattern blocks: 25 of different shapes, colors, and sizes
- pen
- pencils, including one with new eraser
- plastic bee or other small insect
- plastic wrap
- Popsicle stick
- printer
- pushpin
- refrigerator
- rhythm sticks, two for you and two for your student
- rock
- rocks or cans of food, 2 different sizes
- rubber bands, 10, 4 of varying thicknesses and lengths
- ruler
- sack, paper

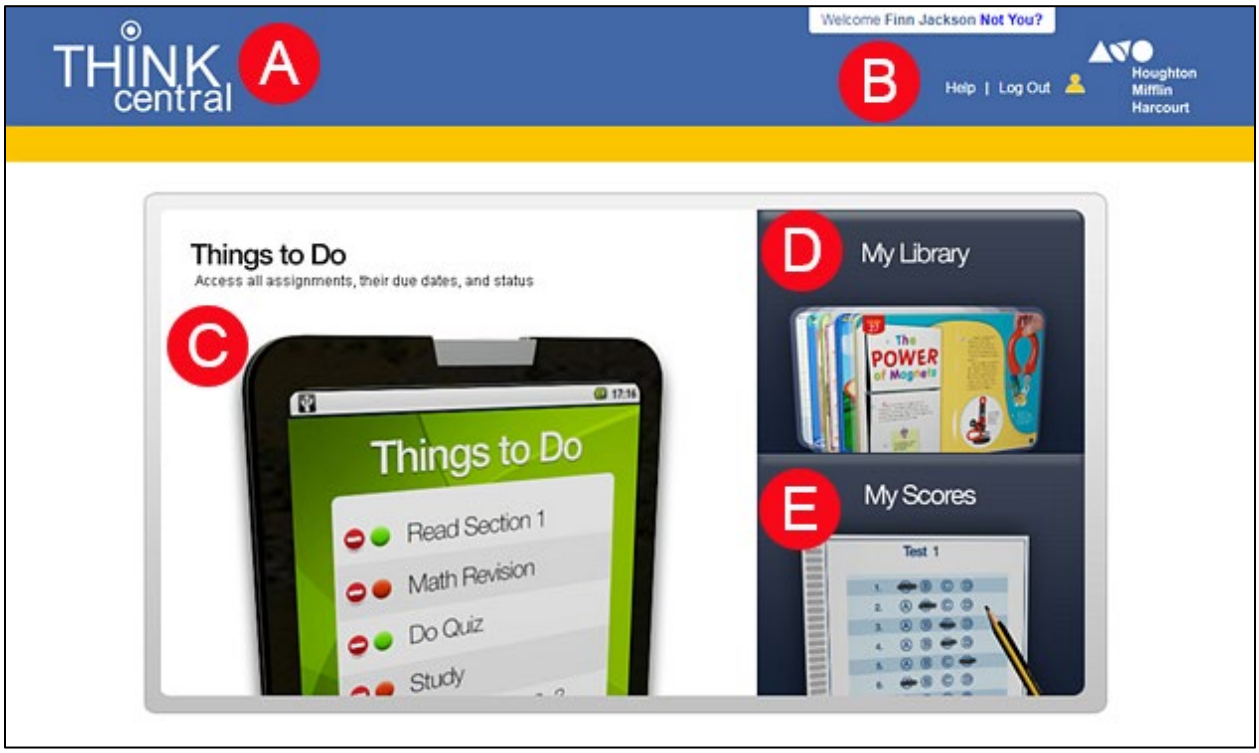
- safety pin
- salt, 1 cup
- sand
- sandpaper or Velcro®
- scarf to use as a blindfold
- scissors
- shells (optional)
- shoe box
- shoelace, white cotton, 14” or longer
- small objects, several (toy cars, marbles, dominoes)
- spiral notebook for Science Journal, wide-ruled, approximately 80 pages
- sponge
- sports water bottle (optional)
- stapler
- stick
- stickers and other decorations (optional)
- stove
- string, 20 feet
- stuffed animal
- sugar, 1 cup
- tablespoon
- tape, clear
- thermometer
- toothpicks, 10
- toy car, small
- toy made of iron or steel, like a small car
- vanilla extract or cinnamon (optional)
- water
- waterproof plate or tray
- whistle
- window with direct sunlight
- yarn, about 1 foot

Online Resources

Navigate ThinkCentral

To move around in *ThinkCentral*:

➔ Click one of the areas on the *ThinkCentral* home page to open that page: **Things to Do**, **My Library**, or **My Scores**.

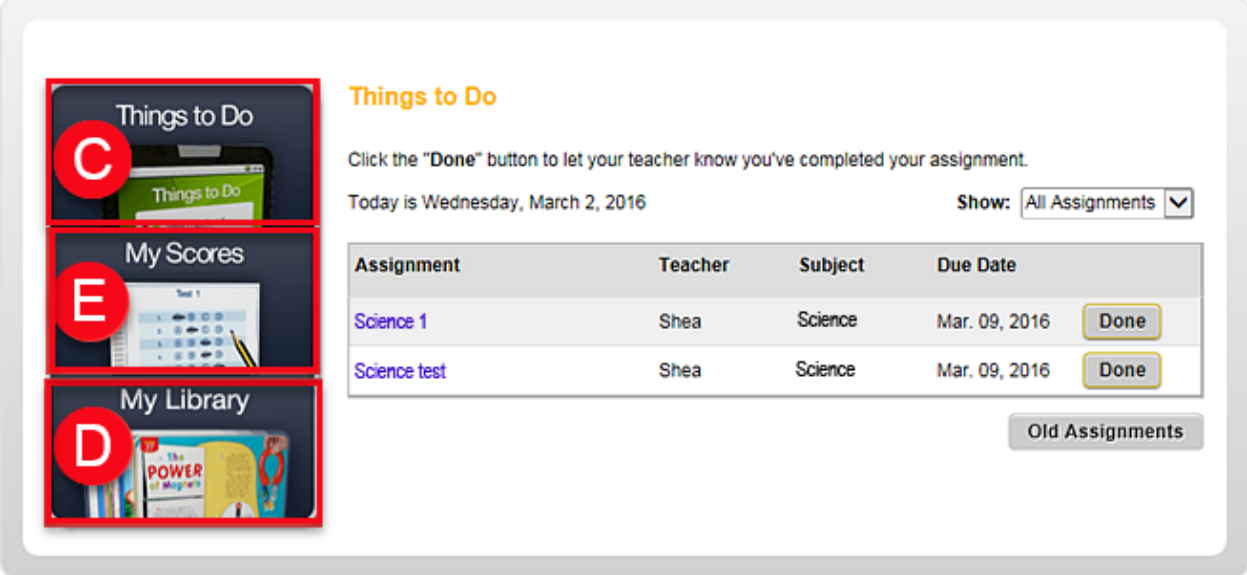


Descriptions of each area is provided in the following table.

Area	Area Name	Description
A	***ThinkCentral* logo**	Returns you to the *ThinkCentral* home page.

Area	Area Name	Description
B	**Banner Links**	• **Help** – Opens an online help system that provides detailed instructions for ThinkCentral tasks. • **Log Out** – Logs you out of ThinkCentral. • Account linking icon – If you have more than one account (accounts in more than one school or more than one class), this allows you to select and open another account.
C	**Things to Do**	Opens the **Things to Do** page, which lists all of the tests and assignments your teacher has assigned to you. You can even find your old assignments after you are done with them.
D	**My Library**	Opens the **My Library** page, where you can find all of your online classroom resources, such as books, movies, sound files, worksheets, and more.
E	**My Scores**	Opens the **My Scores** page, which lists the scores that you received on tests and assignments that you have taken. If your teacher has written a comment on your assignment, you can find it here. You can even look at your old tests to see how well you did on each question.

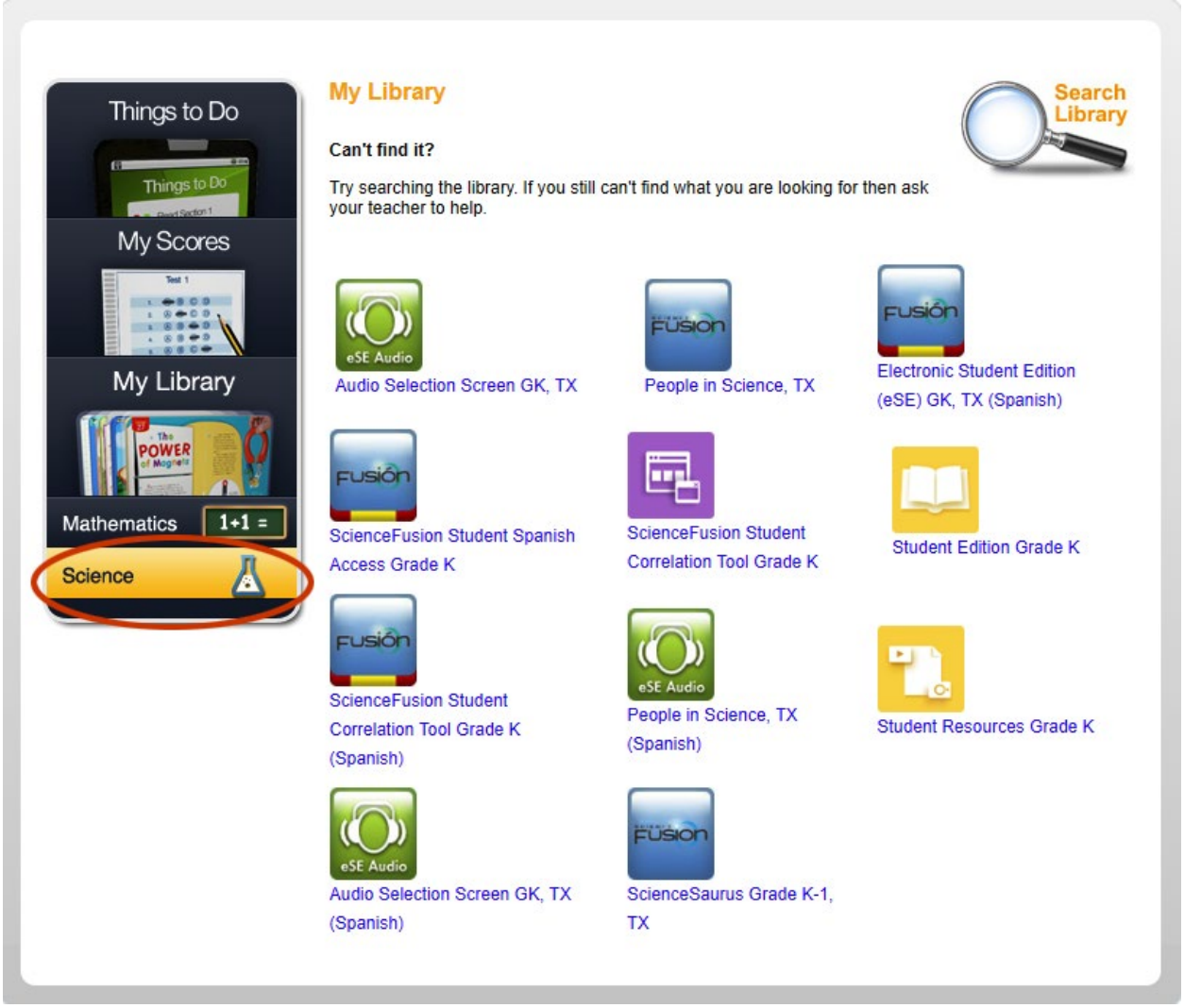
➔ Once you open a page, you can move to a different page by clicking the area with the page name on the left panel.



Using My Library

The **My Library** page lists all of the library items available to you, including online classroom books, movies, sound files, worksheets, and more.

➔ To open the **My Library** page, click **My Library** on the left panel, then click **Science** at the bottom of the panel.



- The **Student Edition** is an exact copy of the *Texas Science Fusion* Write-In Student Edition.
- The **Student Resources** are the resources that will be referred to in these lessons. Click on the corresponding unit name and follow the instructions in the lesson for the appropriate lesson or inquiry lab.
- When completing an inquiry lab, you will **save the report as a PDF** (or print and scan it) to upload for grading.

On the My Library page, you can do any of the following:

➔ Open a library item by clicking the item. The item opens in a separate window.

> **Note:** When you close an item, the **My Library** page is still open.

➔ Click **My Library** to see all of your items again.

➔ Click the **Search Library** magnifying glass. 

Search My Library

My Library lists all of the library items that are available to you. You can search for a specific library item using the **Search Library** option.

To search My Library:

1. In **My Library**, click the **Search Library** magnifying glass. 

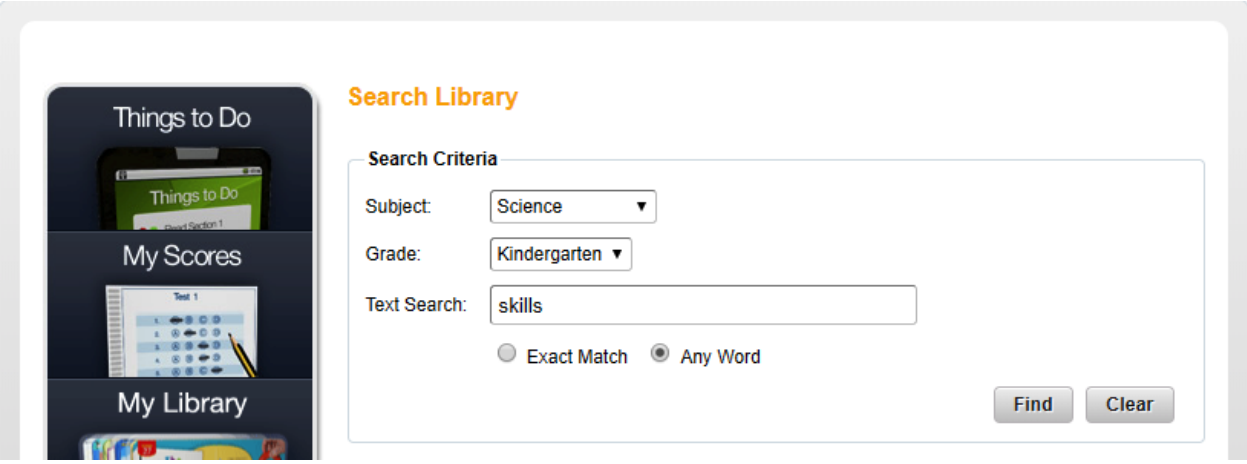
The **Search Library** page appears.

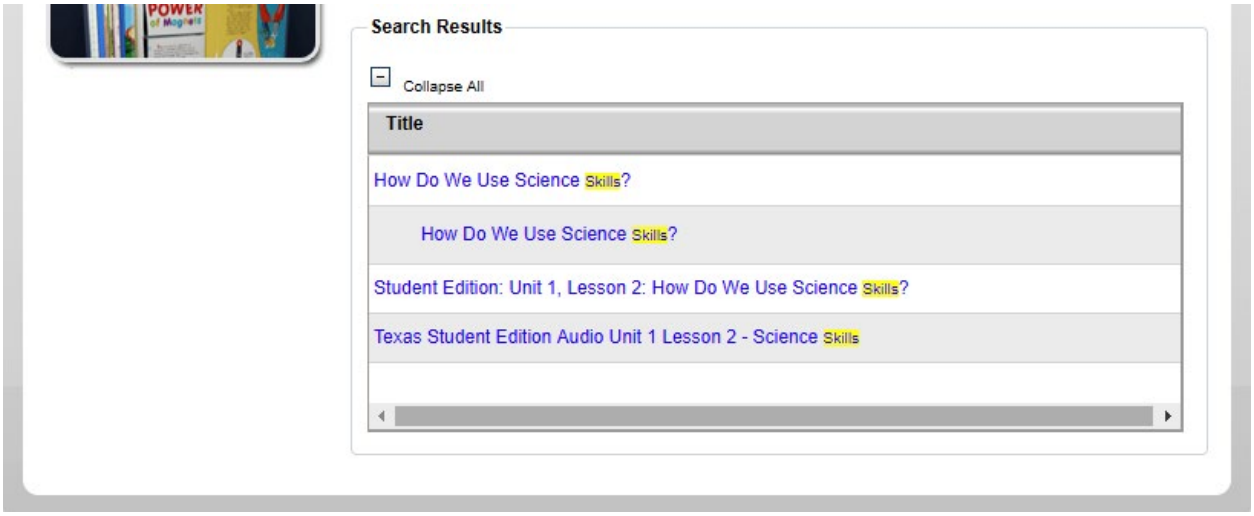
   You can search for a library item by subject, by words, or by both subject and words.

2. In the **Subject** list, select the subject of the item.
3. In the **Text Search** box, type a word or words that identify the item.

> **Note:** To empty the **Search Criteria** area and start a new search, click **Clear**.

4. Click **Find**. The items that match your search filters are listed in the **Search Results** area.





5. To open an item in the list, click the name of the item. The item opens in a separate window.
6. To return to **My Library**, click **My Library** on the left side of the page.

Grading Procedures and Unit Assignment Checklists

Grades are calculated for Unit 1, Unit 2, and Unit 3. Your student must complete 3–6 Assessment Projects for each unit. The semester grade is an average of the three unit grades.

The Unit Projects will be submitted **separately** to Texas Tech University K-12 to be graded. Scan or photograph each Unit Project according to the directions given and combine the images into a ***single*** **PDF** (see "Requirements for Creating PDFs" on the course home page). These projects are located in the appropriate lessons; the last Unit 3 project is in the Final Exam folder. The grading rubrics for each project are in the Resources section of the online course.

When you save your documents, use the naming convention given for each Assessment Project as the name of your file. Upload the file according to the instructions given in the assignment.

Schedule for Unit Projects

Unit 1, Day 25:

- Day 4 Assessment: Our Five Senses
- Day 7 Assessment: Science Skills
- Day 13 Assessment: Science Tools
- Day 16 Assessment: Model Town Project
- Day 20 Assessment: Design Plan
- Day 25: Unit 1 Assessment

Unit 2, Day 50

- Day 30 Assessment: How Do We Describe and Sort Matter?
- Day 33 Assessment: How Can Heating and Cooling Change Matter?
- Day 37 Assessment: Energy: What is Light?
- Day 41 Assessment: Energy: What is Heat?
- Day 45 Assessment: Energy: What is Sound?
- Day 50: Unit 2 Assessment

Unit 3, Day 75

- Day 57 Assessment: Magnetic and Not Magnetic

- Day 64 Assessment: Sum It Up! How Do We Describe Location?
- Day 75: Unit 3 Assessment