Introduction

Curriculum Overview

Have you ever asked a question and looked for an answer? Then you are a scientist! Welcome to the second semester of Grade 2 Science. This semester, you will practice using inquiry skills, the scientific method, and the design process to explore Earth materials, weather, the solar system, the needs of living things, animals and plants, and environments. You will conduct experiments and design solutions to problems. You will learn from books and online. You will also get to do projects of your choice during each unit!

This course contains online components that are another important way of learning, and really fun! Make sure you use the student resources from ***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 online in Blackboard using the PDF **Unit Lessons** and **Worksheets** documents.

Unit assessments in this course consist of two parts, the **Unit Test** and the **Unit Project**. The Unit Tests are online quizzes. For each Unit Project, scan or take digital photographs of the completed project showing the student's work. Combine the images for each assignment into a single PDF (see **Requirements for Creating PDFs** on the course home page) and upload the file for grading as instructed in the assignment.

2nd Grade Science

Science 2B is composed of three units. The Unit 4 in the course includes Unit 6 in *Texas Science Fusion*. Unit 6 in the textbook focuses on weather patterns, precipitation, evaporation, and how the seasons affect living things.

Unit 5 in this course includes Unit 7 and Unit 8 in *Texas Science Fusion*. Unit 7 in the textbook introduces the student to planets and stars, and what causes day and night. In textbook Unit 8, students will learn about the needs of animals and plants, and what plants need to grow.

Unit 6 in this course covers Unit 9 and Unit 10 in *Texas Science Fusion*. In Unit 9, students will learn why plants and animals need each other, how living things adapt to their environments, and how plants survive in different environments. Textbook Unit 10 covers different kinds of animals, how various body coverings help animals, the life cycles of animals and plants, plant parts, and how bean plants grow.

Chart for Units 4–6

Course Unit	*Science Fusion* Unit	Topics Covered
4	6	Weather, evaporation, and the seasons
5	7 and 8	Planets and stars, day and night, and the needs of animals and plants
6	9 and 10	How living things need each other and adapt to their environments, kinds of animals and plants, and the life cycles of living things

Course Objectives

The Texas Essential Knowledge and Skills (TEKS) objectives are covered throughout the science curriculum. At the end of this course, the student should be able to do the following:

1. **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following home and school safety procedures. 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. describe the importance of safe practices; and
   C. identify and demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reuse or recycling of paper, plastic, and metal.
2. **Scientific investigation and reasoning.** The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations. The student is expected to:
   A. ask questions about organisms, objects, and events during observations and investigations;
   B. plan and conduct descriptive investigations such as how organisms grow;
   C. collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools;
   D. record and organize data using pictures, numbers, and words;
   E. communicate observations and justify explanations using student-generated data from simple descriptive investigations; and
   F. compare results of investigations with what students and scientists know about the world.
3. **Scientific investigation and reasoning.** The student knows that information and critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:

A. identify and explain a problem in his or her own words and propose a task and solution for the problem such as lack of water in a habitat;

B. make predictions based on observable patterns; and

C. identify what a scientist is and explore what different scientists do.

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, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums; and

B. measure and compare organisms and objects using non-standard units that approximate metric units.

5. **Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

B. compare changes in materials caused by heating and cooling;

D. combine materials that when put together can do things that they cannot do by themselves, such as building a tower or a bridge, and justify the selection of those materials based on their physical properties.

7. **Earth and space.** The student knows that the natural world includes Earth materials. The student is expected to:

A. observe and describe rocks by size, texture, and color;

B. identify and compare the properties of natural sources of freshwater and saltwater; and

C. distinguish between natural and manmade resources.

8. **Earth and space.** The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

A. measure, record, and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data;

B. identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation;

C. explore the processes in the water cycle, including evaporation, condensation, and precipitation, as connected to weather conditions; and

D. observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.

9. **Organisms and environments.** The student knows that living organisms have basic needs that must be met for them to survive within their environment. The student is expected to:

A. identify the basic needs of plants and animals;

B. identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things; and

C. compare and give examples of the ways living organisms depend on each other and on their environments such as food chains within a garden, park, beach, lake, and wooded area.

10. **Organisms and environments.** The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to:

A. observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs such as fins help fish move and balance in the water;

B. observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant; and

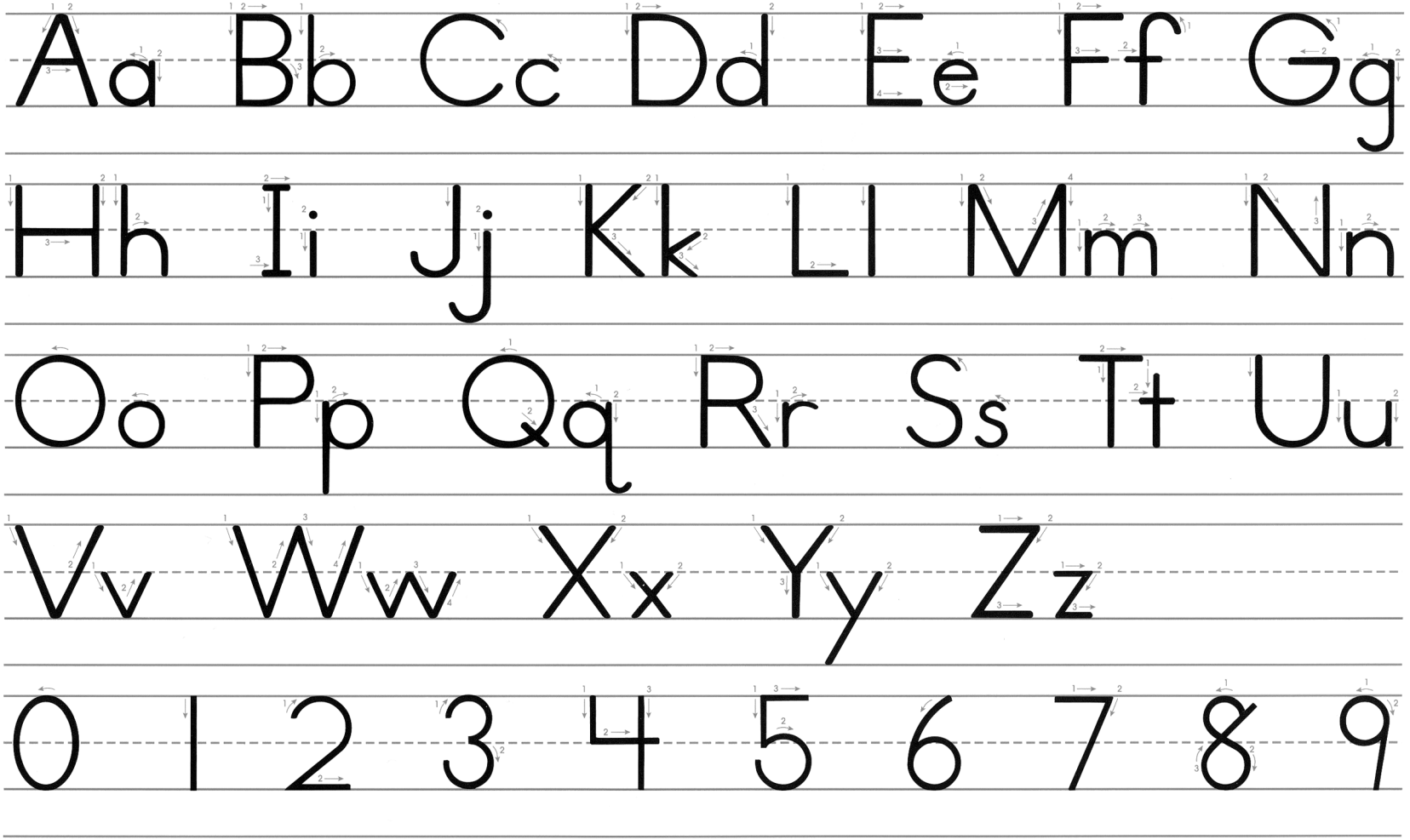
C. investigate and record some of the unique stages that insects undergo during their life cycle.

Source: The provisions of this §112.13 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 math. 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 2 this Semester

Textbooks

You are required to purchase the digital textbook in order to access all lesson materials. Purchase of the print textbook is strongly suggested, as well.

- Digital: *Texas Science Fusion*, Level 2 (includes *ScienceSaurus Grade 2-3, TX*). (2015). Houghton Mifflin Harcourt, Inc. ISBN 978-0-544-06775-2
- Print: *Texas Science Fusion*, Level 2 (2015). Houghton Mifflin Harcourt, Inc. ISBN 978-0-544-02547-9
- Print: *ScienceSaurus Grade 2-3, TX* (2015). ISBN 978-0-544-05783-8

Other Books

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

Required:

- Bancroft, Henrietta, *Animals in Winter* (Let's-Read-and-Find-Out Science, Stage 1)
- Gibbons, Gail, *The Seasons of Arnold's Apple Tree*
- Gibbons, Gail, *Stargazers*
- Hall, Margaret, *Day and Night* (Patterns in Nature)
- Olson, Gillia M., *Phases of the Moon* (Patterns in Nature)
- Jang, Ki-Hwa, English ed. Joy Cowley, *Good Friends* (Science Storybooks)
- Lamb, Violetta J., *Plants and Animals*
- Gibbons, Gail, *Sea Turtles*
- Legg, Gerald. et al., *From Seed to Sunflower* (Lifecycles)
- Bunting, Eve, *Sunflower House*
- Tagliaferro, Linda, *The Life Cycle of a Pine Tree* (Plant Life Cycles)

Optional

- Gibbons, Gail, *Tornadoes!*
- Gibbons, Gail, *Hurricanes!*
- Gibbons, Gail, *Weather Words and What They Mean*
- Gibbons, Gail, *Weather Forecasting*
- Gibbons, Gail, *The Reasons for Seasons*

- Rockwell, Anne, *Clouds* (Let's-Read-and-Find-Out Science, Stage 1)
- Branley, Franklyn M., *Down Comes the Rain* (Let's-Read-and-Find-Out Science, Stage 2)
- Branley, Franklyn M., *Flash, Crash, Rumble, and Roll*
- Cole, Joanna, *The Magic School Bus Inside a Hurricane*
- Branley, Franklyn M., *Snow Is Falling* (Let's-Read-and-Find-Out Science, Stage 1)
- Kosara, Tori, *Hibernation* (Scholastic Reader, Level 2)
- DeWitt, Lynda, *What Will the Weather Be?* (Let's-Read-and-Find-Out Science, Stage 2)
- Rockwell, Anne, *Four Seasons Make a Year*
- Marsh, Laura, *Great Migrations Butterflies* (National Geographic Readers)
- Nelson, Robin, *Migration* (First Step Nonfiction)
- Chrismer, Melanie, *The Sun* (Scholastic News Nonfiction Readers: Space Science)
- Hughes, Catherine D., *Kids' First Big Book of Space* (National Geographic)
- Coelho, Layla, *Planets! A Kid's Book About Planets*
- Baby Professor, *Solar System for Kids: The Sun and Moon* (Children's Astronomy & Space Books)
- Gibbons, Gail, *Sun Up, Sun Down* (Voyager/HBJ Book)
- Mitton, Jacqueline, *Zoo in the Sky: A Book of Animal Constellations*
- Mitton, Jacqueline, *Once Upon a Starry Night: A Book of Constellations*
- Branley, Franklyn M., *The Sky Is Full of Stars* (Let's-Read-and-Find-Out Science, Stage 2)
- Branley, Franklyn M., *What Makes Day and Night* (Let's-Read-and-Find-Out Science, Stage 2)
- Chrismer, Melanie, *The Moon* (Scholastic News Nonfiction Readers)
- Gibbons, Gail, *The Moon Book*
- Branley, Franklyn M., *The Moon Seems to Change* (Let's-Read-and-Find-Out Science, Stage 2)
- Branley, Franklyn M., *Sunshine Makes the Seasons* (Let's-Read-and-Find-Out Science, Stage 2)
- Jordan, Helene J., *How a Seed Grow*s (Let's-Read-and-Find-Out Science, Stage 1)
- Barraclough, Sue, *Animal Needs* (Investigate!)
- Bunting, Eve, *Sunflower House*
- Lauber, Patricia, *Who Eats What? Food Chains and Food Webs* (Let's-Read-and-Find-Out Science, Stage 2)
- Kalman, Bobbie, *What Are Food Chains and Webs?* (Science of Living Things)
- Kalman, Bobbie, *How Do Animals Adapt?* (The Science of Living Things)
- Murphy, Julie, *Desert Animal Adaptations* (Amazing Animal Adaptations)
- Lundgren, Julie K., *Animal Adaptations* (My Science Library, Levels 1–2)
- Kalman, Bobbie, *How and Why Do Animals Adapt?* (All about Animals Close-Up)

- Lundgren, Julie K., *Plant Adaptations* (My Science Library, Levels 1–2)
- Harrison, David, *Now You See Them, Now You Don't: Poems About Creatures that Hide*
- Cousteau, Philippe, and Deborah Hopkinson, *Follow the Moon Home: A Tale of One Idea, Twenty Kids, and a Hundred Sea Turtles*
- Davies, Nicola, *One Tiny Turtle: Read and Wonder*
- Reilly, Kathleen M., *Explore Life Cycles!: 25 Great Projects, Activities, Experiments* (Explore Your World)
- Jenkins, Steve, and Robin Page, *Creature Features: Twenty-Five Animals Explain Why They Look the Way They Do*
- Bennett, Elizabeth, *Life Cycles: Science Vocabulary Readers Set* (Scholastic Science Vocabulary Readers)
- Jenkins, Steve, *What Do You Do with a Tail Like This?*
- Educational Toys USA, *Plant Parts Book* – set of all 6 (CPB9781429607926)
- Carle, Eric, *The Tiny Seed*
- Gibbons, Gail, *From Seed to Plant*
- Fowler, Allan, *Pine Trees* (Rookie Read-Aloud Science)

Materials

Required:

- apple
- bag of Cheetos® or other coated crackers or chips, such as BBQ chips
- balloon
- beans (pinto or lima beans recommended)
- bottle, 2-liter clear plastic, clean and empty
- bowls, clear glass or plastic, large, 2
- chain, metal or plastic
- chalk, white
- cling wrap
- clock, analog
- coins
- crayons
- cups, small clear plastic, 4 (2 disposable)
- desert succulent plants in pots, 2 (try to avoid cactus due to injury risk)
- dry erase board and markers

- flashlight
- globe or ball
- glue, white
- hairspray
- hand lenses or magnifying glasses, small, 2
- ice
- knife
- lima bean seed
- marble
- marker, permanent black
- masking tape
- mitten, glove, or sock made of wool or cotton
- mixed flower seeds, 1 package, any type
- object to cast a shadow with, such as a hand puppet or other bendable object
- packing tape
- paint: black, white
- paintbrush
- paper circle, yellow
- paper clips
- paper towel tube
- paper towels or old newspapers
- paper: unlined (blue, white)
- pencils
- pie pan, metal or aluminum
- pine cone
- plastic bags, large resealable, 3
- plastic container with a lid
- plastic container with no lid
- plastic gloves, new
- plastic measuring cup or plastic beaker with 1 cup measuring line
- Plasticine modeling clay (not air-dry)
- rain gauge (see Instructor Note, Unit 4, Day 76)
- red crayon, pencil, or marker

- rubber band, extra large
- ruler
- Science Journal from SCI 2A or wide-ruled spiral notebook with 4 sections
- scissors
- shaving cream
- sink
- small piece of clay or ball to put on globe at your location on the Earth
- socks
- sponge, paper towels, or newspaper for spills and clean-up
- sunny windowsill or sunny place with at least 6 hours of sun, or a work lamp
- tape
- thermometer, outdoor, with Fahrenheit scale
- vegetable shortening, such as Crisco, 1 can
- water
- wind sock or weather vane (see Instructor Note, Unit 4, Day 76)
- yogurt or plastic cup, small, empty, clean

Optional

- Butterfly kit or Ladybug kit from Insect Lore
- camera
- craft knife or box cutter
- flat pan or tray
- paper plates, 6
- poster board or large piece of paper or cardboard
- soda bottle, empty plastic
- stapler
- trip to the zoo or pet store

Science Journal

Your student used a wide-spaced spiral notebook with four sections as a Science Journal in Science 2A. If the student ran out of space, give him or her a new wide-ruled spiral notebook with four sections to use as a Science Journal for Science 2B. During the semester, the student will be adding information to each of the sections. Have the student label the sections as follows:

- Big Idea and Essential Questions

- Vocabulary
- Investigations
- I Wonder

A new Science Journal cover is provided in the **Worksheets** document in the **Resources** section of this course.

Technology Resources

Refer to the **Online Resources** section in this Introduction for information on how to access the digital textbook and other resources on the *ThinkCentral* website. In the **My Library** section of *ThinkCentral*, click the **Student Resources Grade 2** button to access the digital lessons.

These **optional** resources may be used before, during, or after the lessons outlined in the Science 2B course. The digital lessons reinforce the concepts taught in the lessons in *Texas Science Fusion.* They provide interactive experiences using simulations, animations, and videos. The inquiries (virtual labs) provide opportunities for your student to apply laboratory and scientific thinking skills by conducting exciting virtual experiments. These inquiries provide advantages in safety, time, and cost of materials.

Beginning on the next page is an outline of the lessons and inquiries that are available online.

continued →

Course Unit 4

Textbook Unit 6

- Lesson 1: How Does Weather Change?
  - ◊ Days 77–79
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 223–232
- Lesson 2: How Can We Measure Precipitation?
  - ◊ Day 80
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 233–234
- Lesson 3: What Are Some Weather Patterns?
  - ◊ Days 82–85
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 235–244
- Lesson 4: What Is Evaporation?
  - ◊ Day 86
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 245–246
- Lesson 5: How Do Seasons Affect Living Things?
  - ◊ Days 89–93
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 247–256

Course Unit 5

Textbook Unit 7

- Lesson 1: What Are Planets and Stars?
  - ◊ Days 102–106
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 267–276
- Lesson 2: What Causes Day and Night?
  - ◊ Days 107–108
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 279–290
- Lesson 3: How Can We Model Day and Night?
  - ◊ Day 109
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 293–294

Textbook Unit 8

- Lesson 1: What Are Animal Needs?
  - ◊ Days 116–118
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 301–310
- Lesson 2: What Are Plant Needs?
  - ◊ Days 120–121
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 313–320
- The Lesson 3 Inquiry is not covered in a lesson; it is part of Unit 5 Project Choice 2.

Course Unit 6

Textbook Unit 9

- Lesson 1: How Do Plants and Animals Need One Another?
  - ◊ Day 127–130
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 331–344
- Lesson 2: How Are Living Things Adapted to Their Environments?
  - ◊ Days 131–133
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 345–356
- Lesson 3: Can Plants Survive in Different Environments?
  - ◊ Days 134–135
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 357–358

Textbook Unit 10

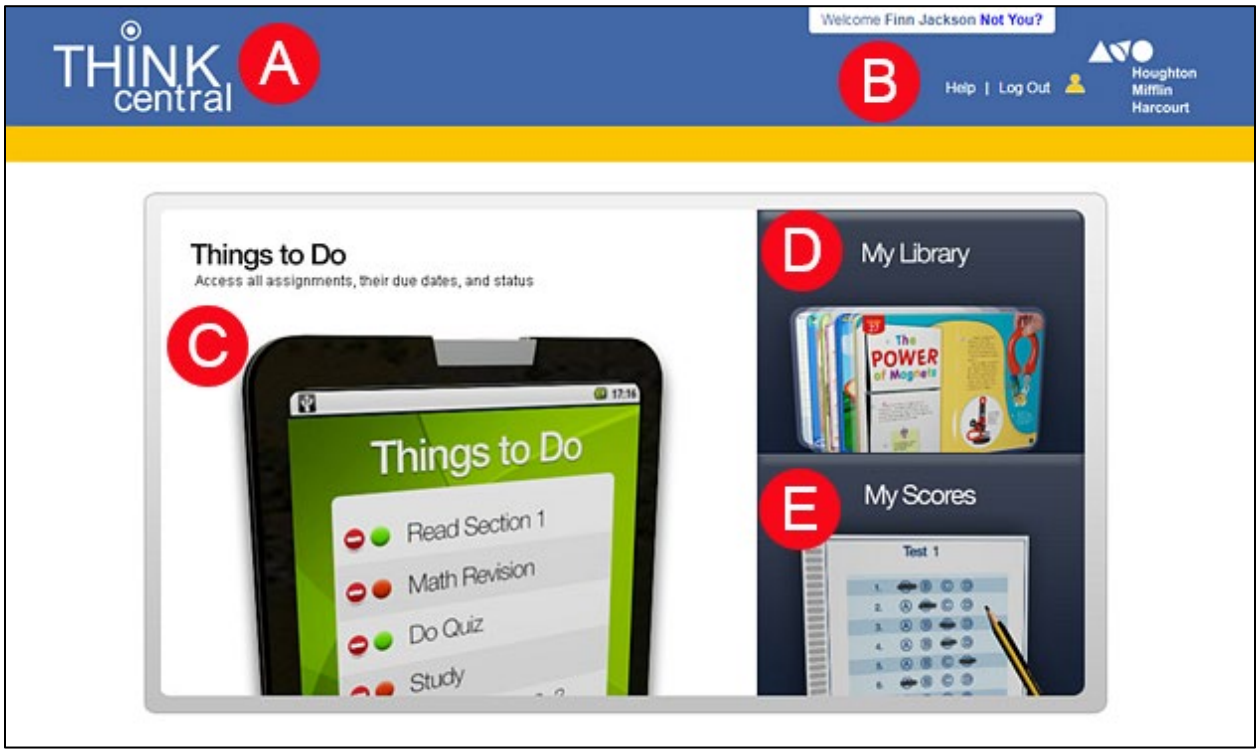
- Lesson 1: What Are Some Kinds of Animals?
  - ◊ Days 137–138
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 369–380
- Lesson 2: How Do Body Coverings Help Animals?
  - ◊ Days 139–140
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 381–382
- Lesson 3: How Can We Compare Animal Life Cycles?
  - ◊ Days 141–142
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 383–394
- Lesson 4: What Are Some Plant Parts?
  - ◊ Days 143–144
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 395–404
- Lesson 5: What Are Some Plant Life Cycles?
  - ◊ Days 145–146
  - ◊ Digital Lesson
  - ◊ *Science Fusion*, pages 407–418
- Lesson 6: How Does a Bean Plant Grow?
  - ◊ Day 147–149
  - ◊ Inquiry
  - ◊ *Science Fusion*, pages 419–420

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**.

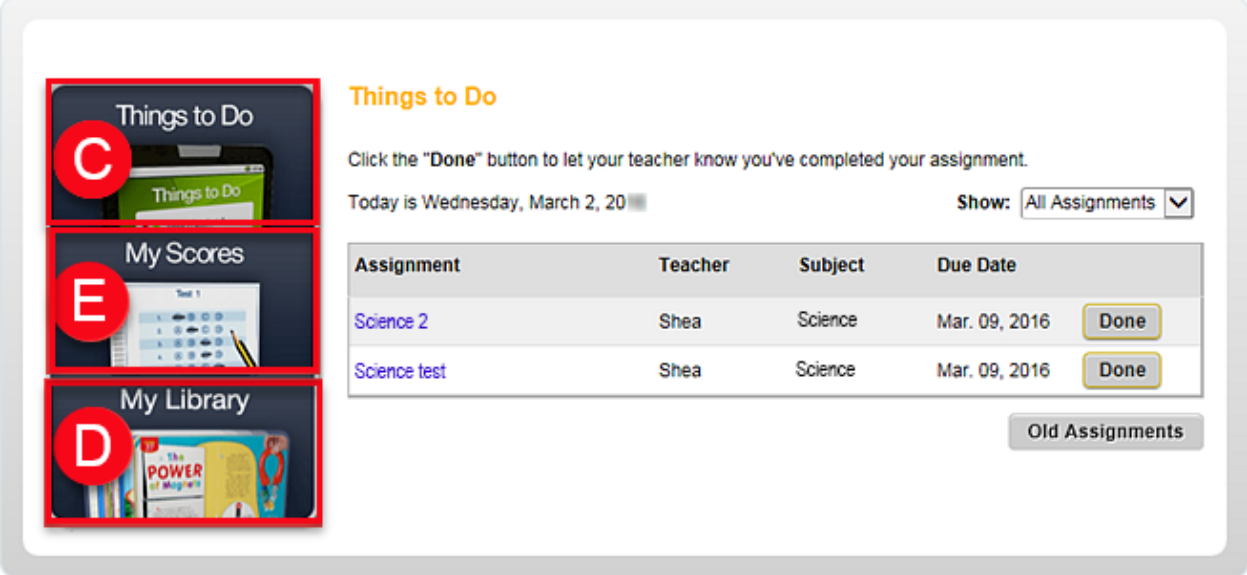


Descriptions of each area is provided in the following table.

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.

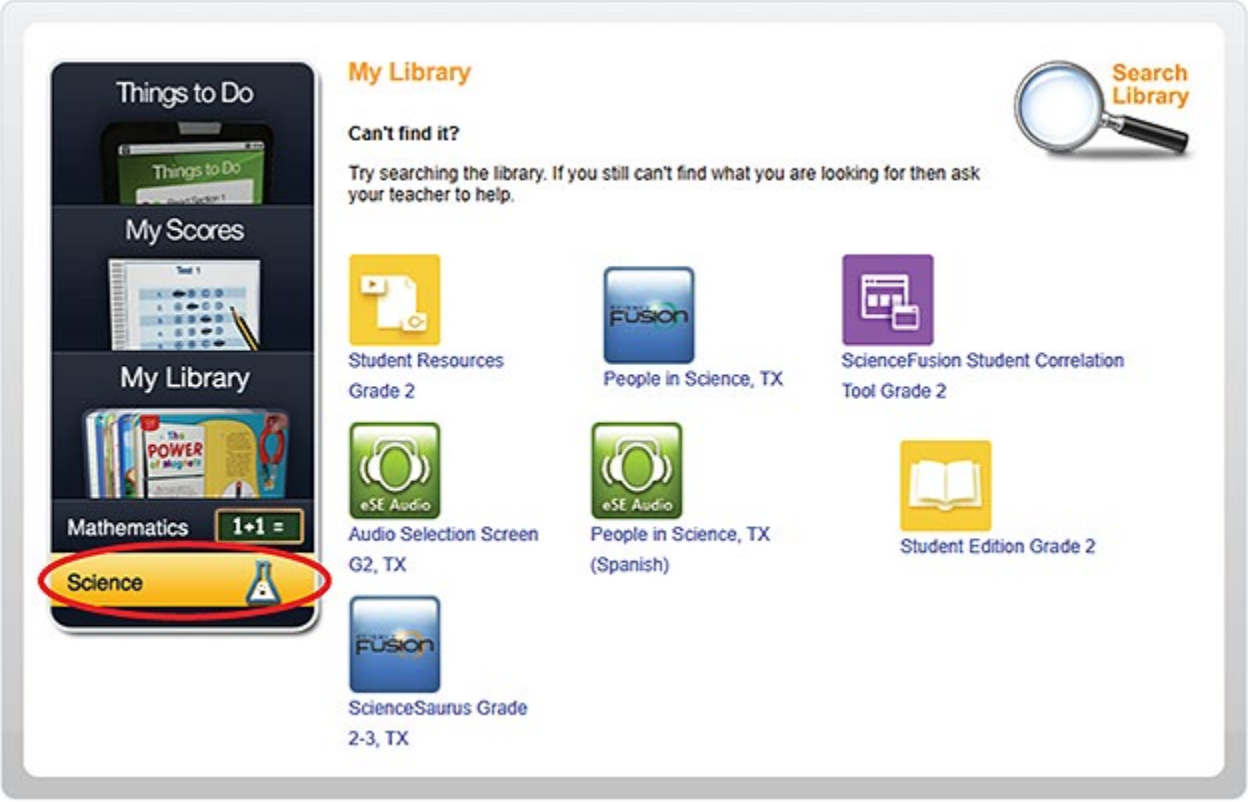


continued →

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 Grade 2** is an exact copy of the *Texas Science Fusion* Write-In Student Edition.
- The **Student Resources Grade 2** 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.

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.

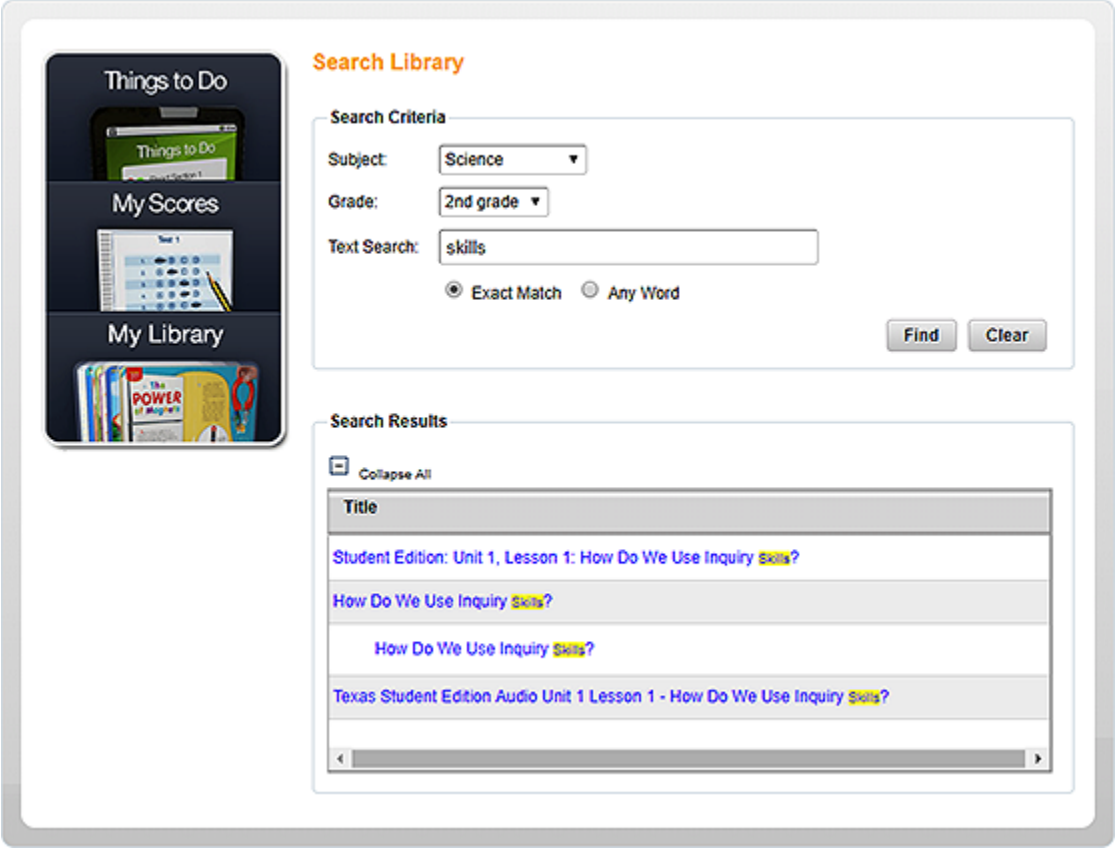
   You can search for a library item by subject, by words, or by both subject and words.

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.

Digital Lessons and Inquiries

In the **My Library** section of *ThinkCentral*, click the **Student Resources Grade 2** button to access the digital lessons.

These **optional** resources may be used before, during, or after the lessons outlined in the Science 2 course. The digital lessons reinforce the concepts taught in the lessons in *Texas Science Fusion.* They provide interactive experiences using simulations, animations, and videos. The inquiries (virtual labs) provide opportunities for your student to apply laboratory and scientific thinking skills by conducting exciting virtual experiments. These inquiries provide advantages in safety, time, and cost of materials.

Example of Student Resources screen for one Unit on ThinkCentral

Grading Procedures and Unit Assignment Checklists

Grades are calculated for Unit 4, Unit 5, and Unit 6. The semester grade is an average of the three unit grades. The unit grades will include a test and a project for each unit. The Units 4 and Unit 5 Tests and Projects are located in their respective Unit folders in this online course; the Unit 6 Test and Project are the Final Exam folder.

The Unit Tests and Projects will be submitted **separately** to Texas Tech University K-12 to be graded. The Unit Test is an online quiz and the Unit Project is an upload assignment.

Scan or photograph each Unit Project. Combine multiple images into a ***single*** **PDF**. When you save your documents, use the naming convention given for each Unit Test or Unit Project as the name of your file. Upload the file according to the instructions given in the assignment.

Schedule for tests and projects

Unit 4:

- Days 98–99: Review for the Unit 4 Test.
- Day 100: Administer the Unit 4 Test.
  Submit the Unit 4 Project.

Unit 5:

- Days 123–124: Review for the Unit 5 Test.
- Day 125: Administer the Unit 5 Test.
  Submit the Unit 5 Project.

Unit 6:

- Days 148–149: Review for the Unit 6 Test.
- Day 150: Administer the Unit 6 Test.
  Submit the Unit 6 Project.