



ThinkUp!TM

SCIENCE

Instruction support for **TEKS**

Contents

How to Use <i>ThinkUp! Science</i> for Core Content	3
Lesson 1	4
Lesson 2	4
Lesson 3	4
Lesson 4	5
Lesson 5	5
How to Use <i>ThinkUp! Science</i> for Intervention.....	6
Lesson 1	7
Lesson 2	7
Lesson 3	7
Lesson 4	8
Lesson 5	8
How to Use <i>ThinkUp! Science</i> for Supplemental Content.....	9
Suggestions for Integrating <i>ThinkUp!</i>	9

How to Use *ThinkUp! Science* for Core Content

Updated June 2022

If you plan to implement **ThinkUp! Science as core content** to support TEKS instruction, the following resources are a valuable starting point. Here you will find sample lesson plans as well as ideas for integrating *ThinkUp! Science* into your school's instructional plan.

Our Approach

ThinkUp! Science provides rigorous content that is both research-based and fully aligned to the TEKS. Research tells us that student outcomes improve when students learn to think critically, and then learn how to connect that thinking to learning. Each unit in *ThinkUp! Science* closely follows this research, equipping teachers to facilitate critical thinking development using the 9 Traits of Critical Thinking™ to master learning targets.

As former classroom teachers, we share your goal to equip students to think critically and master the content so they are prepared for high-stakes testing, the next grade level, and a career beyond high school.

Science Lesson Plans for Core Content

Use these example lesson plans as a starting point if you plan to use *ThinkUp! Science* as core content in your classroom. The plans are designed to provide fully-aligned, standards-based instruction as students master a new concept over the course of five lessons.

The location for each suggested *ThinkUp! Science* unit component is noted as either **Student Edition (SE)** or **Teacher Edition (TE)**.

Before You Begin

1. Use Table of Contents (TE) to determine which unit aligns to desired TEKS.
2. Read Clarifying the TEKS (TE) for background information and instructional context.
3. Read the Focus for the 9 Traits of Critical Thinking (TE) to familiarize yourself with the two critical thinking traits for the unit. This will empower you as a teacher to push students to think critically.
4. Administer the pre-assessment found in the Teacher Toolbox or on our website. This will give you valuable information on what pre-requisite skills your students need to strengthen. It will also help you gauge the level of support students will need during the unit.
5. Display the TEKS Learning Targets (TE) in your classroom. This will give students a chance to focus on what they are trying to accomplish in this unit.
6. Check out the Extension section for that unit (TE). You will find Home Connection activities that parents can do with their kids to support the concept that they are learning about in school. Many teachers choose to put these activities in a newsletter or post them on their website.

Lesson 1

Focus: Introduce the Concept(s)

Time: 60 min

1. Introduce TEKS Learning Targets (SE) with students. (5 minutes)
2. Use the Concept Exploration (TE) for an interactive, hands-on lab to introduce the concept(s). Have students complete the corresponding Concept Exploration page (SE). (45 minutes) Most labs will require manipulates or preparation, so make sure to review the materials list provided in your TE. (15 minutes)
3. Engage students in debriefing thoughts and implications related to the Concept Exploration activity. Monitor student responses/discussions and adjust the next day's instruction as needed. (5 minutes)
4. Have students complete an exit ticket as a closure activity: Share one true statement as it relates to the lesson objective. Based on today's lesson, students will probably share a vocabulary term or a conclusion they made from the Concept Exploration. (5 minutes)

Lesson 2

Focus: Examine the Concept & Build Vocabulary

Time: 60 min

1. Have students complete the Concept Development Activity in the (SE). This will always happen in three stages - Examine the Concept, Apply the Concept, and Relate to the Process Skills. These three sections will provide scaffolding to build mastery of the unit content. The (TE) provides guidance on how to navigate these three sections with students. (30 minutes)
2. Have students complete the Vocabulary Mastery: Science Vocabulary Builder activity found in the (SE). (10 minutes)
3. Reinforce vocabulary by pulling a provided vocabulary activity from the (TE). (20 minutes)

Lesson 3

Focus: Build Vocabulary and Reinforce Learning

Time: 60 min

1. Choose one of the titles from the Literature Connection and do a read aloud to make explicit connections to the TEKS Learning Targets (SE). (10 minutes)
2. Then have student complete the Vocabulary formative assessment, found in the (TE), as a warm-up activity. (5 minutes)
3. The teacher will use the Concept Practice pages in both the (SE) and (TE) to model instruction. Read each question together and discuss the correct and incorrect responses to reveal misconceptions. Model strategies to help students think logically. Assess student understanding and provide feedback as needed. Guiding questions for each item are provided for the teacher in the (TE). (25 minutes)
4. Now it is time for students to apply what they have learned by completing Concept Application (SE). If time does not allow, this could be torn out and sent home to complete. (20 minutes)

Lesson 4

Focus: Concept Check

Time: 60 min

1. Debrief Concept Application items that students completed the day before. (20 minutes)
2. Give students another formative assessment to see if they are understanding the concept. This can be found in the (TE). Discuss conclusions whole group. (10 minutes)
3. Now it is time for students to complete the Concept Check Section (SE). (30 minutes)

Lesson 5

Focus: Differentiate and Review

Time: 60 min

1. Introduce student to extension activities and cross-curricular connections. Many teachers will build these activities into science stations (SE). (5 minutes)
2. As students engage in extension and cross-curricular connection activities, meet briefly with small groups to provide reteach and intervention opportunities based on assessment data. (30 minutes)
 - Identify students in need of further concept instruction. Use appropriate Intervention Activity (TE) to scaffold instruction of the standard(s).
 - Assign Extending Student Thinking found under the Extension section (TE) to differentiate and further student learning.
3. Use observations made during re-teaching or extensions to assess student progress. Option: Use the Suggested Formative Assessment for Intervention (TE). (5 minutes)
4. Reflecting is one of the 9 Critical Thinking Traits™. It is important to show value to this trait by making it important throughout the entire learning experience. Another way to show value is to model reflection for your students. In the Extension section (SE) students will reflect on their learning and on their critical thinking. While they are reflecting, it is important that you complete the teacher reflection (TE). Debrief reflections with each other. Ask for input on your reflections. (10 minutes).

How to Use *ThinkUp! Science* for Intervention

Updated June 2022

If you plan to implement *ThinkUp! Science* as intervention content to support TEKS instruction, the following resources are a valuable starting point. Here you will find sample lesson plans that are designed to guide intervention instruction for a small group of students or whole class that have not mastered a previously covered concept.

Our Approach

ThinkUp! Science provides rigorous content that is both research-based and fully aligned to the TEKS. Research tells us that student outcomes improve when students learn to think critically, and then learn how to connect that thinking to learning. Each unit in *ThinkUp! Science* closely follows this research, equipping teachers to facilitate critical thinking development using the 9 Traits of Critical Thinking™ to master learning targets.

As former classroom teachers, we share your goal to equip students to think critically and master the content so they are prepared for high-stakes testing, the next grade level, and a career beyond high school.

Science Lesson Plans for Intervention

Use these example lesson plans as a starting point if you plan to use *ThinkUp! Science* as intervention content in your classroom. The plans are designed to provide fully-aligned, standards-based instruction to guide students to mastery of each concept over the course of five lessons.

For each suggested *ThinkUp! Science* unit component, its location is noted as either **Student Edition (SE)** or **Teacher Edition (TE)**

Before You Begin

1. Use the Table of Contents (TE) to determine which unit aligns to the desired TEKS.
2. At the beginning of every unit you will see Clarifying the TEKS (TE). It is wise to read over this section for background information and instructional context

Lesson 1

Focus: Introduce the Concept(s)

Time: 60 min

1. Have students complete the Concept Exploration (SE). This will allow students the opportunity to think through and explore a concept.
2. While students are exploring, facilitate academic conversation using questions and instructional examples from the Concept Exploration (TE).

Lesson 2

Focus: Build Vocabulary

Time: 30 min

1. Sometimes students understand the concept, but lack the necessary vocabulary to secure full concept mastery. By building up the students' academic vocabulary, you are helping them build conceptualization of science processes. Discuss unit/standard vocabulary found both in the (TE) and (SE).
2. Complete the Vocabulary Mastery (TE) to build further understanding of unit vocabulary.
3. Have students complete Vocabulary Mastery (SE) for additional practice and to demonstrate their comprehension of the vocabulary.
4. End with the Vocabulary Formative Assessment (TE).

Lesson 3

Focus: Intervention Activities

Time: 45 min

1. Support unit concept with a Suggested Instructional Activity (TE) or Intervention Activity (TE). Monitor students during the activity to observe, identify, and correct any misconceptions of the concept.
2. Invite students to examine Concept Application and Concept Practice (SE) questions and scenarios to cross out an answer choice that is incorrect and justify their choices. This is a great exercise that challenges students to think deeply about the concept while reinforcing a great test-taking strategy.
3. Have students complete a Concept Application or Concept Practice and use the data to identify areas that need reinforcement or extension.

Lesson 4

Focus: Master the Concepts

Time: 45 min

1. Support learning with a Suggested Instructional Activity (TE) that has not been utilized.
2. Monitor students during the activity to observe, identify, and correct any misconceptions of concept.
3. Re-assign Unit Assessment (SE).
4. Use Assessment data to determine students in need of further concept instruction. Identify students who can benefit from extension of concept.
5. Promote mastery by assigning an Error Analysis activity. Post a representative question from the unit with an incorrect solution or process.
6. Have students determine, discuss, and correct the error. Share out results.

Lesson 5

Focus: Review and Reinforce

Time: 30 min

1. Identify students that have mastered the concept and have them complete the activity in the Extension section. (SE).
2. Identify students in need of further concept instruction. Use an additional Intervention Activity (TE) to further scaffold instruction of the standard(s).
3. Use observations made during re-teaching or extensions to assess student progress. Option: Use the Suggested Formative Assessment for Intervention (TE).
4. Have students reflect on their learning and their critical thinking.

How to Use *ThinkUp! Science* for Supplemental Content

Suggestions for Integrating *ThinkUp!*

Matching instructional materials is simple if you are using *ThinkUp! Science* to supplement other classroom resources. Many components can easily be combined to create ‘zero additional minutes’ time during your instructional day. These components are shown with an (*).

The location for each suggested *ThinkUp! Science* unit component is noted as either **Student Edition (SE)** or **Teacher Edition (TE)**.

Steps:

1. Use the **Table of Contents** in your *ThinkUp! Science* Teacher Edition to match each unit’s Focus TEKS with your district Year at a Glance or Scope and Sequence documents.
2. Use the table below to help you locate matching routines between *ThinkUp! Science* and other resources used for science instruction.

<i>ThinkUp!</i> Component	May Match With:	Possible Solution to Create ‘Zero Additional Minutes’ Time
*Pre-Assessment	Pre-Assessment	Use the <i>ThinkUp! Science</i> Pre-Assessment
*TEKS Learning Target	Key Concept, Essential Question, Target Skill, Introduce the Concept, Student learning goals	Use the TEKS Learning Target component section during the introduction of the TEKS focus alongside other instructional materials.
Critical Thinking Traits Formative Assessment	none	This time should be added after the introduction of the TEKS learning target to help students connect their learning to the 9 Traits of Critical Thinking .
*Concept Exploration	Introduction Activity, Warm-up	Use Concept Exploration as an introductory activity before jumping into other instructional materials. Use this activity to give students the opportunity to be inquisitive and to discover science concepts through exploration.
*Vocabulary Mastery	Expand Vocabulary, Academic Vocabulary, Vocabulary List	Mastering academic vocabulary is essential for students to be able to read and understand word problems. The Vocabulary Mastery in each unit identifies words that are associated with the focus TEKS and instructional activities to support their instruction. Compare the list from <i>ThinkUp! Science</i> with other instructional materials to create one list. Choose an activity from your available options.
Literature Connection	none	Use the Literature Connection to reinforce the concept vocabulary. Most of these books can be found in your school library.

<i>ThinkUp!</i> Component	May Match With:	Possible Solution to Create 'Zero Additional Minutes' Time
* Concept Development in SE	Examples, Classwork, Homework, "I Try, You Try"	Concept Development can be used as homework because it provides examples of the process and then asks students to complete similar problems. The page is perforated, so it can be torn out and combined with homework assignments from other instructional materials.
* Concept Development in TE	Instructional Activities, Whole Class Instruction, Small Group Instruction	The Concept Development provides a menu of instructional activities that are teacher-facilitated to help students develop the concept. Compare this list of activities with those provided in your core curriculum and see how you can supplement with <i>ThinkUp!</i> activities to build a stronger lesson. You do not need to do all these activities or to follow them in a specific order. Remember that this is a menu, so choose the activities that will help create a well-balanced lesson.
* Concept Application & Concept Practice	Test-Prep, Homework, Classwork,	Concept Application and Concept Practice are formatted like a STAAR Assessment for student practice. Concept Application/Concept Practice provides a script on how to debrief the items with students for deeper understanding. This page can be combined with other instructional materials that are formatted like a standardized test.
* Concept Check	Quiz, Assessment, Unit Test, Chapter Test, Benchmark	Concept Check can be used as a quiz after covering the content in your core curriculum or it can be combined with another assessment to create a unit test.
* Intervention	Small Group Instruction, Reteach, RTI, Tier 2 or Tier 3 Instruction	Choose either the Intervention activities from <i>ThinkUp! Science</i> or from other instructional resources if provided.
* Extension in SE	Science Challenge, Warm-up, Exit Ticket, Reflection	Use the Science Challenge in addition to other instructional materials that challenge students to extend their critical thinking skills to enhance their problem solving or scientific process skills. This section ends with reflection questions, which would make for a great exit ticket.
* Extending Student Thinking	Extension, Project-Based Learning	The Extending Student Thinking section provides a project-based activity that will allow students to apply what they have learned to create something new, which is the highest level of Bloom's Taxonomy. This is a great way to end any unit.
* Home Connection	Parent Involvement, Family Connection	Use the ideas from Home Connection with suggestions from other instructional materials to share with parents and caregivers through classroom newsletters or digital communication apps.