

PhD Science TEKS Edition

and Specially Designed Instruction

FIELD USER GUIDE

A collaborative project of the Texas Education Agency and the Inclusion in Texas Network



Table of Contents

| Purpose of This Guide1 |
|---|
| Specially Designed Instruction and PhD Science TEKS Edition |
| Considerations for Teacher Collaboration in an Inclusive Environment |
| Curriculum Development Considerations4 |
| Overview of Specially Designed Instruction and a Sample Student5 |
| Development of IEP Supports Within PhD Science TEKS Edition Lessons |
| Special Considerations for Modifications |
| Evidence-Based Practices9 |
| Side-by-Side Example Standard Unit with Embedded Specially Designed Instruction11 |
| Accommodations, Modifications, Differentiation, Language and Specialization Supports Found Within PhD Science TEKS Edition |
| Resources |

Purpose of This Guide

This Field User Guide was developed to support the use of the High Quality Instructional Materials (HQIM) PhD Science TEKS-aligned instructional materials to provide specially designed instruction (SDI) for students with disabilities as required through Individuals with Disabilities Education Act or IDEA (2004). Both general and special educators play a role in implementing SDI for students with Individualized Education Programs (IEPs). This document provides multiple ways to approach and plan for the provision of SDI and presents multiple lenses through which readers can examine the connections between the tools and content in PhD Science TEKS Edition and the components of SDI, which are: content, methodology, and delivery of instruction.

The content and lessons in PhD Science TEKS Edition are subject to change; however, the implementation remains the same. For the examples in this resource, we've utilized Module 3: Earth Changes from Grade 3 of the pilot PhD Science TEKS Edition.

The SDI is tailored specifically to address the impact the disability has on a student's learning. It is designed to ensure access of the child to the general curriculum and to enable the child to meet IEP annual goals. The Admission, Review, and Dismissal (ARD) committee develops SDI for each student. The following graphic is from the <u>SDI Field User Guide</u> from the Inclusion in Texas Statewide Initiative.



*Impact of disability is only one part of the present levels of academic and functional performance statement (PLAAFP).

Specially Designed Instruction and PhD Science TEKS Edition

The following are tools or supports included in PhD Science TEKS Edition that aid in the development of specially designed instruction.

| SDI Component | Description | Examples from PhD Science TEKS Edition |
|----------------------------|--|---|
| Content | The curriculum, aligned with the state standards, is the content of instruction. Content adjustments could include the following: Different level text, different sequence of instruction, etc. Modifications determined by the ARD committee | While reading the book excerpt to the class, support students who encounter unknown vocabulary by providing synonyms or visuals. Consider defining critical words (e.g., tier, intervene) and using expressions, gestures, and photographs to give a sense of other words (e.g., anxiety, swift). |
| Methodology | The methodology includes the instructional approach(es) best suited to the student's needs. PhD Science TEKS Edition offers assessment opportunities through checks for understanding, conceptual check points, content challenges, and End of Module Assessments (EOMA). | Teacher modeling: Offer individual modeling or small-group modeling when appropriate. Visuals Flexible grouping Multiple means of representation PhD Science TEKS Edition offers modules that overlap across grades levels. |
| Delivery of Instruction | Delivery of instruction can include the following: Frequency – once a week, daily, two times a week, etc. Duration – 30 minutes, one hour, etc. | Direct, explicit instructions Spiral reviews (daily 10–15 minutes) Pre-spiral Simultaneous spiral Post-spiral Centers / stations (daily or weekly 10–20 minutes) Mini lessons (when needed 10–15 minutes) Anchor charts for student reference Individualized reference sheets Lessons (daily or weekly, depending on the skill or concept and time allotted by campus) General education classroom, self-contained classroom, special education classroom, etc. Multiple means of engagement |
| Accessibility Features | Accessibility features (accommodations) remove barriers to learning, change how the content is taught, or how the student accesses the general education curriculum. | Recorded instruction with closed captioning Text-to-speech software Decoding strategy cheat sheet Flexible PDFs |

Considerations for Teacher Collaboration in an Inclusive Environment

The following table outlines the different collaborations that may take place regarding SDI in an inclusive environment. It is not meant to be an exhaustive list of activities a teacher might undertake or how the different roles and considerations look in the classroom.

| General Education Teacher | Special Education Teacher | Technology Considerations |
|--|--|--|
| Provide clear directions in multiple ways: Written Modeled Verbal | Meeting with teacher; e.g., itinerant/co-teacher to preview and model the lesson design. | Record yourself breaking down the directions, or meet with the student in a conferencing platform to clarify as needed. |
| Model expectations and demonstrations Provide sentence stems | Utilizes co-teaching approach during lessons to demonstrate and/or as the teacher explains steps in a process. | In a virtual platform, demonstrate the concept to the student using manipulatives/props or send a recording of your demonstration. |
| Assistive technology for vision needs | Upload documents to a virtual platform that provides access to magnification tools. | Type or project content using a large font. |
| Vocabulary development investigations | Pre-teach vocabulary to introduce students to new vocabulary words before the new vocabulary words are used within the context of new learning. Re-teach vocabulary or concepts to remind students of previously learned material before the prerequisite knowledge is used within the context of new learning. | Use sentence stems in a virtual platform, which assists in scaffolding instruction to help students get started in speaking and writing. |

Curriculum Development Considerations

When beginning new learning, it is important to consider students' learning from previous grade levels. Subsequent learning is also important, as it gives teachers a view of what learning comes next to ensure appropriate mastery at the students' current level.

Earth Science — Grade 3 Source: Pilot PhD Science TEKS Edition (Great Minds) Module 3: Earth Changes — How can the island of Surtsey change shape over time? Targeted TEKS: 3.7A, 3.7B, 3.5C, 3.5D

Prior Learning:

Kindergarten: Source: Module 2: Life

- Rocks have observable properties. (K.7A)
- Water has observable properties and occurs in the natural world. (K.7B)

First Grade:

Source: Module 3: Spotlight Lesson - Earth Materials

- Land is made up of rocks, soil, and sand. (1.7A)
- People can identify natural water sources and describe their sizes, shapes, and surroundings. (1.7B)
- Air is all around us, and moving air is called wind. (1.8D)

Second Grade:

Source: Module 2: Biomes

- Rocks have properties that can be observed and compared. (2.7A)
- Differences between freshwater and saltwater can be determined by identifying their properties. (2.7B)

Third Grade (starting point): During this Module:

Students study the anchor phenomenon, the transformation of Surtsey, and build an answer to the Essential Question: How can the island of Surtsey change shape over time?

- Land has shape and is made up of rocks, soil, and sand.
- Wind and water can shape land by moving material from one place to another.
- Earth events change land over short and long time spans.
- Some Earth events that change land happen too slowly for an individual to directly observe.
- Natural events transform Earth's land as time passes.
- Students use their knowledge of how land changes over time to explain the anchor phenomenon.
- Students apply their knowledge of the natural world to explain how to slow or prevent land from changing.

After this Module:

- Students apply the concept of how land changes over time to a new context.
- Students develop an enduring understanding that natural events transform Earth's land as time passes.

Earth Science — Grade 3 Subsequent learning

Fourth Grade: Source: Module 3: Earth Systems

- A landscape can be described by its distinctive features. (4.7B)
- Layers of rock and the fossils in those layers provide evidence of changes to Earth's surface over time. (4.7B)
- In the process of weathering, natural materials exert force on rock, causing the rock to break into smaller pieces. (4.7B)
- The process of erosion causes changes in landscapes at varying rates. (4.7B)
- Patterns of Earth's features reveal that canyons form when rivers carve mountains. (4.7B)
- Natural processes and features occur in patterns. (4.7B)

Fifth Grade:

Source: Module 1: Earth Features

- A landscape can be described by its distinctive features. (5.7B)
- Layers of rock and the fossils in those layers provide evidence of changes to Earth's surface over time. (5.9D)
- In the process of weathering, natural materials exert force on rock, causing the rock to break into smaller pieces. (5.7B)
- The process of erosion causes changes in landscapes at varying rates. (5.7B)
- Patterns of Earth's features reveal that canyons form when rivers carve mountains. (5.7B)
- Natural processes and features occur in patterns. (5.7A & B)

Possible misconception:

Students may think that Earth's land is static with little or no change to the physical properties, such as size or shape, occurring over time.

Strategies to address misconception:

- Targeted video clips that address content e.g. landslides, volcanoes, earthquakes
- Targeted instruction utilizing a small number of key vocabulary

Overview of Specially Designed Instruction and a Sample Student

| Impact of Disability (excerpt from PLAAFP) | Annual Goal | Specially Designed Instruction | Progress Monitoring Plan |
|---|---|---|--|
| How does the identified disability impact the student's learning? | How much can the student progress in one year? Goals should be rigorous yet attainable. | What does the student need to ensure progress? | How will we know the student is successful? |
| For the purpose of specializing this lesson plan, let's consider this sample student: Alisha. Alisha's has been identified as a student with a specific learning disability in reading comprehension. This identified disability is impacting Alisha's ability to process text, understand its meaning, and to integrate her own previous learning with what she reads. It is documented that Alisha cannot synthesize information to create new understanding independently and is unable to make inferences or use evidence to support understanding. Alisha also has difficulty understanding new material due to delays in grammatical understanding and word meaning. | After reading a story at her instructional level, Alisha will identify the main idea and two supporting details with 80 percent accuracy across four of five trials. | Below are a few options for adapting the content, methodology, or delivery of instruction as appropriate. When using passages to acquire new skills in science, the teacher will ensure a version of the text is available at Alisha's instructional reading level. When introducing content, Alisha will preview the content and the special educator will pre-teach vocabulary words using visuals and additional examples. | The special educator will provide an instructional reading passage every two weeks and track the accuracy of Alisha's ability to identify the main idea and two details. The special educator may use passages across subject areas, whether read independently or in a group aloud and to ask Alisha to recall the main idea and details in these passages. The teacher may take anecdotal notes and use them to inform specially designed instruction in reading to guide Alisha's instruction. |

Development of IEP Supports Within PhD Science TEKS Edition

The following are examples of how PhD Science TEKS Edition content is utilized with examples of IEP-driven supports, which are developed and applied specifically to student needs and the impact of their disability. Consider our student Alisha and the impact discussed in the Overview of SDI section. The following examples are possible ways to implement her SDI during a PhD Science TEKS Edition lesson.

The following examples use the lesson: Grade 3: Pilot PhD Science TEKS Edition Level 3: Earth Changes-Concept 1: The Composition and Shape of Land - Lesson 1 and 2: What is happening to the island of Surtsey?

| General Application: | Differentiation Techniques: | Specially Designed Instruction: |
|---|--|--|
| What the curriculum says | Adaptations made for all students not required by IEP and provided at teacher discretion | IEP-driven and supports accommodations and modifications implemented routinely as outlined in an IEP |
| Key Terms Students are introduced to and learn vocabulary relevant to the conceptual targets and key objectives of the module. | Create a word wall that displays key terms of the module along with student-friendly definitions and images. | Introduce and instruct on novel vocabulary by pre-conferencing with Alisha. Provide personalized vocabulary card sets with student friendly definitions and images. |
| Lesson 1: Launch Show students photographs of Surtsey. Tell students to record what they notice and wonder about the group of pictures. | Provide scaffolding support for the I Notice/I Wonder chart, such as sentence stems or frames. I notice the difference between and is I wonder how is related to | Provide a bank of words to choose from to complete cloze statements. |
| Lesson 1: Learn Invite students to pass an inflatable globe around the classroom by gently tossing it to one another. Instruct students to point to an area they think shows land. | If students are limited in their abilities to toss or catch the inflatable globe, consider having them pass the globe by rolling it or handing it to one another. (This is an example of a PhD Science TEKS Edition Differentiation Note) | No IEP driven supports needed since this activity is not affected by Alisha's learning disability of reading comprehension. |
| Lesson 1: Land Refer to the class list of land features, and encourage students to think about how observing these features could help them answer the Phenomenon Question What is happening to the island of Surtsey? ▶ How do the natural features of the land where we live compare with Surtsey's natural features? | Provide a graphic organizer, such as a Venn diagram, to compare and contrast natural features of land where the students live with the island of Surtsey. Provide sentence stems to support the students in answering the question. is similar to/different from (circle one) because | Provide images that represent the land features. Model how to complete the Venn diagram. Reduce the number of land features to classify using the Venn diagram or only partially complete the diagram. Check in frequently to monitor progress and provide feedback and clarifications. |

Special Considerations for Modifications

Modifications are changes to what (not how) a student will be learning. Modifications are provided when accommodations (adaptations to how) aren't sufficient to access the content and are only allowable when an Admission, Review, and Dismissal (ARD) committee agrees they are appropriate. For the following considerations, the <u>TEKS Vertical Alignment for STAAR Alternate 2</u> <u>Science.</u>

Earth Science: Grade 3

Teachers can use formative assessment and other data sources to determine student readiness for the grade level content. Teachers may need to conduct reteaching or remediation to prepare students for the new instruction. Consider working from the most recent standard and working backward to less complex and finding the student's instructional level using current data sources.

Consider the depth and complexity of the standard and if the depth and breadth need to be adjusted for the student to access the content if deemed necessary by the ARD committee. The following examples of teacher moves support learning at the previous standards that align with the current lesson.

| Previous Standards | Teacher Moves To Address Students At This Instructional Level |
|---|---|
| • observe, investigate, describe and discuss earth materials, and their properties and uses. (Pre-K) | Provide earth materials and discuss how the items feel, smell, sound, and look. |
| observe, describe, and sort rocks by size, shape, color, and texture (K) observe and describe physical properties of natural sources of water, including color and clarity (K) give examples of ways rocks, soil, and water are useful (K) | Provide rocks, soil, and water to students. Provide time to explore the properties. Take time to ask open ended questions to students and encourage them to ask questions of one another. During the conversation provide sentence starters to support students who might struggle to ask questions or make statements. Provide terminology that relates to the key vocabulary in the lesson to support future learning. |
| observe, compare, describe, and sort components of soil by size, texture, and color (1) identify and describe a variety of natural sources of water, including streams, lakes, and oceans (1) identify how rocks, soil, and water are used to make products (1) | Utilize the teacher moves above and then ask students to compare and contrast items. Create a K-W-L chart about natural sources of water with students in a small-group. Discuss how rocks, soil and water are used to make things. Watch a short video clip of a process that rocks, soil, or water are used to manufacture an item. |
| observe, describe, and compare rocks by size, texture, and color (2) identify and compare the properties of natural sources of freshwater and saltwater (2) | Students begin to focus mainly on rocks. Provide additional rocks of various types (igneous, sedimentary, metamorphic). Provide pictures of rocks or video clips of how they form in a small-group prior to the start of the new lesson. Students can investigate saltwater and freshwater and the property of density by conducting a sink or float experiment in a station or small-group. |

Evidence-Based Practices

Evidence-Based Practices are those that are supported by research and have positive outcomes for students.

The following examples can be found at <u>Accommodation Central: Classroom Accommodations</u>, courtesy of Region 13.

Scaffold Steps in a Process

Reformat complex concepts into individual steps to improve accessibility for a student struggling with memory, attention, focus, or comprehension.

Examples:

- Create a bulleted list of steps.
- Space out each step required to understand a concept.

How to implement:

- 1. Determine the process that requires support, based on your knowledge of the student's needs.
- 2. Create a step-by-step process to review with the student.
- 3. Schedule time to teach the student to properly use the tool or process and model appropriate use of the support using a think-aloud process.
- 4. Lead guided practice using the tool or process providing immediate supportive and corrective feedback.
- 5. Assign and monitor independent practice using the tool.
- 6. Monitor and record the student's progress and the effectiveness of the accommodation.

Worked Example

Educator provides a step-by-step demonstration of how to complete a task or solve a problem during the initial acquisition of a skill.

Example:

Anchor chart

How to implement:

- 1. Determine the task or problem that requires support, based on your knowledge of the student's needs.
- 2. Create a worked example demonstrating the task or problem-solving process.
- 3. Schedule time to teach the student to use the worked example as a reference, using a think-aloud process.
- 4. Lead guided practice using the worked example, providing immediate supportive and corrective feedback.
- 5. Assign and monitor independent practice using the worked example.
- 6. Monitor and record the student's progress and the effectiveness of the accommodation.
- 7. Make plans to fade the support provided by the worked example and to increase the students' independence.
- 8. Share progress and effectiveness with the student, the educational team, and the family.

Evidence-Based Practices

Word Walls

A collection of words displayed on classroom walls, windows, or bulletin boards that functions as a visual scaffold and helps the student to learn new vocabulary.

Example:

Specific terminology

How to implement:

- 1. Identify which words to display based on the student's needs and the content to be covered.
- 2. Display the word wall where the student can see it and read the words from his or her desk.
- 3. Teach the student how to use the word wall, and model using it in a variety of contexts.
- 4. Practice by referring to and using the word wall daily.
- 5. Update the word wall. Add new words intentionally, and remove words that have been mastered.
- 6. Monitor and record the student's progress and effectiveness using the word wall.

Sentence Stems

Sentence stems give the student an opportunity to effectively communicate using complete sentences. Sentence Stems can be used when asking a student for oral and written responses.

Examples:

- That reminds me of ...
- I predict that ...
- I have a connection to ...

How to Implement:

- 1. Determine the language proficiency and specific needs of the student.
- 2. Develop sentence stems that apply to the student at various levels of language proficiency.
- 3. Place sentence stems in a prominent part of the room or give them to the student.
- 4. Teach the student how to use sentence stems in a variety of contexts and with a variety of content.
- 5. Lead guided practice in how to use sentence stems. Provide lots of opportunities for the student to practice using sentence stems with peers and independently.
- 6. Monitor and record the students' progress and effectiveness using the sentence stems.
- 7. Provide specific feedback to the student about his or her progress.
- 8. Scaffold the students' learning by increasing the rigor of sentence stems based on student progress and need.

Side-by-Side Example Standard Unit with Embedded Specially Designed Instruction

The following is a side-by-side comparison of a PhD Science TEKS Edition unit and a unit that has SDI embedded. It also includes areas of collaboration between professionals that occurs prior to the lesson.

| Lesson Instruction Overview | General Lesson Grade 3: Pilot PhD Science TEKS Edition Level 3: Earth Changes | Specially Designed Instruction (SDI) | Collaboration of Teachers Prior to Lesson |
|---|--|---|---|
| Key Terms From the Module | Students are introduced to and learn vocabulary relevant to the conceptual targets and key objectives of the module. | Introduce vocabulary by pre- conferencing and instructing students. Provide personalized vocabulary card sets with student-friendly definitions and images. | Determine vocabulary to be introduced and taught prior to the whole class lesson. Conference with students to discuss relevant vocabulary. Create card sets with student-friendly definitions and image of relevant vocabulary. |
| Launch: The lesson opening, which engages students as they begin thinking about the lesson phenomenon. | Lesson 1: Launch Show students photographs of Surtsey. Tell students to record what they notice and wonder about the group of pictures. | Provide a bank of words to choose from to complete cloze statements provided to students. Provide sentence stems to match with notice and wonder statements. Provide key words that describe the photos for students to use to share their thinking. | Create cloze statements and vocabulary word bank to aid in describing photographs of Surtsey. |
| Learn: The heart of the lesson, during which students develop new knowledge and apply prior knowledge to explore phenomena. | Lesson 1: Learn Invite students to pass an inflatable globe around the classroom by gently tossing it to one another. Instruct students to point to an area they think shows land. | No changes needed since this activity is not affected by the learning disability of reading comprehension. | Create cloze statements and vocabulary word bank to aid in describing photographs of Surtsey. |

Side-by-Side Example Standard Unit with Embedded Specially Designed Instruction

| Lesson Instruction Overview | General Lesson Grade 3: Pilot PhD Science TEKS Edition Level 3: Earth Changes | Specially Designed Instruction (SDI) | Collaboration of Teachers Prior to Lesson |
|--|--|---|---|
| Land: The lesson closing, in which students reflect on what they have learned. | Lesson 1: Land Refer to the class list of land features, and encourage students to think about how observing these features could help them answer the Phenomenon Question What is happening to the island of Surtsey? ▶ How do the natural features of the land where we live compare with Surtsey's natural features? | Provide images that represent the land features. Model how to complete the Venn diagram. Reduce the number of land features to classify on the Venn diagram. Monitor progress frequently with check ins and provide feedback and clarifications. | Gather and label images that represent different land features. Create a Venn diagram template, and model how to classify the land features based on similarities and differences. Work with a small-group of students, monitoring progress providing feedback, and clarifying misconceptions. |
| | Lesson 2: Launch Display Google Earth and zoom in on students' locality until land features students described in the previous lesson are visible. Ask: ► How does this model of Earth compare with our classroom globe? | For visually impaired students, use Google Earth accessibility features: voice over, zoom, and magnifier. Identify specific features on which students can focus their attention. Create a Venn diagram template, and model how to classify the land features based on similarities and differences. Monitor progress frequently with check ins and provide feedback and clarifications. | Identify specific locations and features to focus students' attention. Create a Venn diagram template virtually, and model how to classify the land features based on similarities and differences. Work with a small-group of students, monitoring progress, providing feedback, and clarifying misconceptions. |

Side-by-Side Example Standard Unit with Embedded Specially Designed Instruction

| Lesson Instruction Overview | General Lesson Grade 3: Pilot PhD Science TEKS Edition Level 3: Earth Changes | Specially Designed Instruction (SDI) | Collaboration of Teachers Prior to Lesson |
|--------------------------------|--|---|---|
| | Lesson 2: Learn Introduce Life on Surtsey: Iceland's Upstart Island by Loree Griffin Burns (2017). Display photographs of Surtsey, and ask: What new information do these pictures reveal about Surtsey's land features? Remind students of their exploration of the land near their school and the list of land features the class created. How do Surtsey's land features compare with those of the land we observed? What do you now wonder about the land of Surtsey? Introduce and read aloud An Island Grows. Have students demonstrate their understanding of the formation process depicted in An Island Grows by using the strategy Act It Out. Ask students to draw a model that shows what they have learned about the formation of Surtsey. | Provide a word wall and/or glossary of content and academic vocabulary students may encounter. Provide an alternate way to demonstrate understanding of the text if students have limitations on mobility or movement. Provide a sample model for students to discuss aloud. | Create word wall/ glossary of content and academic vocabulary with student friendly definitions and images. Work with a small-group of students, monitoring progress, providing feedback, and clarifying misconceptions. Create a sample model of the formation of Surtsey. |

Side-by-Side Example Standard Unit with Embedded Specially Designed Instruction

| Lesson Instruction Overview | General Lesson Grade 3: Pilot PhD Science TEKS Edition Level 3: Earth Changes | Specially Designed Instruction (SDI) | Collaboration of Teachers Prior to Lesson |
|--------------------------------|--|---|--|
| | Lesson 2: Learn Ask students to work with a partner to discuss the anchor model and their observations of land. Have the partners think of at least one new question they have about Surtsey and changes to its land. Students will develop a driving question board. | Provide sentence stems to support students in developing questions. | Create sentence stems to support students in developing questions. Work with a small-group of students, monitoring progress, providing feedback, and clarifying misconceptions. |

Accommodations, Modifications, Differentiation, Language, and Specialization Supports Found Within PhD Science TEKS Edition

The following tables include specialization supports found within PhD Science TEKS Edition.

| English Language Development | | |
|--|--|--|
| Collaborative Conversations | Explicit Introduction of Terminology | |
| Fishbowl Inside-Outside Circles Mix and Mingle Question Corners Response Techniques Socratic Seminar Think-Pair-Share Value Line-Up Vote-Discuss-Revote Whip Around | Act It Out Concept Map Frayer Model Link Up Logical Analogies Morpheme Matrix Outside-In Signal Unknown Words | |

Differentiation Supports

- Student Grouping
- Videos and Images
- Models and Investigations
- Sentence Stems and Word Bank

Resources

Accommodation Central. ESC, Region 13, n.d.. <u>http://acentral.education/</u>

Texas Education Agency. 2018. "TEKS Vertical Alignment for STAAR Alternate 2 Science Pre-Kindergarten through End-of-Course." https://tea.texas.gov/sites/default/files/TEKS%20Vertical%20Alignment%20for%20STAAR%20 Alternate%202%20Science 09.21.18.pdf.

Texas Education Agency. 2022. "Great Minds-PhD Science TEKS." <u>https://gm.greatminds.org/</u>phdscienceteksedition.

United States. 2004. Individuals with Disabilities Education Act. Part 300. <u>https://www.ecfr.gov/current/title-34/subtitle-B/chapter-III/part-300</u>.