EDUC 4053 Teach Science EC-3 CBE

West College of Education

COURSE SYLLABUS

Fall 2022, revised Aug 2022

INSTRUCTOR INFORMATION

Instructor: Dr. Dittika Gupta, Associate Professor
Office Location: BH 210
Email Address: dittika.gupta@msutexas.edu
Office Hours: Tuesday 11:00-1:30pm, Wednesday 11-12pm, and Thursday 11-12:30pm. Optional Virtual hours in addition 4-5pm on Tuesday!
Preferred Form of Communication: GroupMe and email

INSTRUCTOR RESPONSE POLICY

We will be working and communicating constantly throughout the semester. Email is great however you will also be a part of class GroupMe which will provide more flexibility in communication. I will try my best to answer all emails and texts within 24 hours, however you will definitely get a response within 48 hours (2 days). Any emails or texts received during weekends will not receive a response till the following Monday. No emails or texts will be answered over the weekend.

COURSE INFORMATION

None. Numerous links and files will be provided within the course."

COURSE DESCRIPTION

This field-based course focuses on elementary school science pedagogy with emphasis on instructional strategies and models, the use of technology in the learning/teaching process, effective practices, professionalism, curriculum, and lesson design. Different teaching strategies include: appropriate use of creative approaches to the learning/teaching process, cooperative learning, direct instruction, inquiry, concept attainment, etc. An important component of this field-based block of classes is the course time spent in active participation in field (classroom) experiences.

Competency List

This course will build mastery of the following competencies:

1. Demonstrate knowledge of the Science domain of the *Texas Prekindergarten Guidelines* and of the Texas Essential Knowledge and Skills (TEKS) for Science (Kindergarten through Grade 5), as well as ways to scaffold and sequence skills and concepts to teach science to young children.

2. Apply knowledge of how to plan and implement inquiry-based science lessons that are responsive to children's diverse interests, knowledge, skills, and experiences and that promotes children's development of scientific knowledge, inquiry, and skills.
3. Demonstrate knowledge of developmentally appropriate strategies for encouraging children to explore and make discoveries about their world (e.g., exploratory play, using senses, using simple tools or technology to gain information about environment, incorporating children's literature, making predictions and/or drawing conclusions on the basis of observation).
4. Demonstrate knowledge of instructional resources, tools and materials, including technology, for teaching science and procedures for ensuring the proper use of safety equipment and safe practices during classroom science activities.
5. Apply knowledge of key concepts of physical science, Earth and space science, and life science to select strategies and methods for developing children's knowledge and skills in these areas through a variety of developmentally appropriate, meaningful, authentic learning experiences and real-world applications.
6. Apply knowledge of developmentally appropriate strategies for encouraging students to view themselves as competent scientific explorers and activities for promoting students' ability to think and communicate scientific knowledge through written expression (e.g., providing opportunities to observe and describe objects and phenomena; engaging in simple investigation; applying skills such as collecting, classifying, and interpreting data; recognizing patterns and drawing conclusions).
7. Demonstrate knowledge of developmentally appropriate strategies and procedures for implementing scientific inquiry methods in classroom laboratory and outdoor investigations, including understanding and applying terminology common to scientific investigations.
8. Demonstrate knowledge of types of digital tools and resources and strategies for using them to enhance teaching effectiveness, create learning experiences that facilitate creativity, and promote student achievement across the content areas.
9. Demonstrate knowledge of developmentally appropriate digital tools and resources and strategies to help children explore real-world issues, solve authentic problems, develop global awareness, participate in local and global learning communities, and develop the ability to pursue and manage their own learning, while understanding safety and privacy
risks.

STUDENT COMPETENCIES

Upon completion of this course, the student will be able to:

• understand that science involves observing, analyzing, and investigating the natural world. • explain how science educational initiatives emphasize student-centered inquiry and conceptual understanding.

• identify the basic structure of inquiry-based practices.

• select the science concepts, procedures, and skills that they will use during inquiry-based instruction. • determine the best model for conducting inquiry-based instruction.

• create a positive classroom environment where learning is rigorous, yet engaging, trust is evident and everyone believes that they can learn.

• understand that a positive classroom environment is essential in promoting active inquiry-based learning.

• lead their class to a deeper understanding of science concepts using various approaches. • change their classroom alternative conceptions and misconceptions of science concepts through various instructional practices.
• earn certification in TEA Science Safety Training for Elementary School through Gateway Courses. • learn about Science Classroom Safety, the law, and how it applies to the science teacher. • develop formative assessment processes that will be used as a feedback loop to help learning move forward.
• develop summative assessments that will provide evidence of student knowledge and understanding at the learning cycle's end.
• develop authentic assessments which are designed to measure understanding of several learning targets. • apply key concepts of physical, earth/space, and life sciences to develop lessons using strategies and methods that increase understanding through authentic learning experiences.
• utilize digital tools, resources, and strategies to enhance their teaching effectiveness. • create a learning experience that facilitates creative and critical thinking skills across the curriculum.

How to navigate this course

1) Modules are arranged in correspondence with Learning Outcomes (LO).
2) Read the overview of the course.
3) Start with the module "OPEN Me First!" The module includes the syllabus and a quiz. You should score 100% for the quiz to start the first module, M1. You may retake the quiz any number of times.
4) You should start at Module 1 and finish the module at your own pace.
5) At the end of the module, there are two assignments.
6) You can move on to the next module when you score an 80% or more in both the module assignments.
7) Every module follows the same pattern. There will be assignments at the end of each module. You should score at least 80% in each assignment to finish the module and to move on to the next module.
8) After you successfully complete Module 3, you can start the assignments related to observation (Field Module). Important! You will not be able to start your field module until you finish Module 3 successfully. You should contact your pre-determined mentor teacher to observe and teach in their classroom.
9) Once you finish all the modules, you will be able to navigate to the "FINAL PROJECT" module. You should score at least 80% in the final project to successfully complete the course.

STUDY HOURS AND TUTORING ASSISTANCE

The TASP offers a schedule of selected subjects tutoring assistance. Please contact the TASP, (940)397-4684, or visit the ASC homepage for more information.
Tutoring & Academics Supports Programs

STUDENT HANDBOOK

Refer to: 2021-2022 Student Handbook

ACADEMIC MISCONDUCT POLICY & PROCEDURES

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individuals to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.
Office of Student Conduct

INSTRUCTIONAL METHODS

This is an online Competency Based Education (CBE) course. Learning activities include assorted reading and videos, written assignments, and a key assessment.

Student Responsibilities or Tips for Success in the Course

To be successful in this course, plan to spend at least **9** hours to read/listen/watch online content, post discussion responses, complete assignments, and study the course material.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%

B = 80%-89%

D = 60%-79%

F = Below 60%

COMPETENCY ASSESSMENTS

Written Assignments

Each module will have a written assignment that will assess your ability to synthesize and apply the module's learning goal.
The module written assignment is an assessment of your knowledge of the material required for the competency. A rubric score of 80% or higher is required to demonstrate mastery of each learning goal.
If you score less than 80 points on any written assignment, you will have an opportunity to review the material and redo the assignment. You may redo the assignment up to two times. If you have not passed the module in two attempts, you will work with a Faculty Coach to determine another method of fulfilling the program requirements in this subject. In order to demonstrate competency, a rubric score of 80% or higher is required.

Performance-Based Final Project – *Science Observation 5E Lesson Plan*

The performance-based final project for EDUC 4053 is an original 5E lesson plan which can be the one observed by your faculty coach. The final project is an assessment on your ability to synthesize and apply the concepts learned in the modules. A score of 80% or higher is required to demonstrate competency on each section of the final project.

Assignments related to Observation:

OBSERVATION LESSON PLAN (100 points)

(Submit in D2L before pre-conference. The final version of the same should be posted in D2L before 11:30 pm on the day of your observation class.)
You have learned how to plan a lesson. You will put the theory of lesson plan making into practice during this semester when you apply the plan in the classrooms. Details of the lesson plan requirements, template, and the rubric can be found in the corresponding module.

CLASSROOM TEACHING OBSERVATION (100 points) (Submit class videos)

This is the evaluation of your observation class, based on the observation rubric in the corresponding module. The recorded video of the classroom teaching should be submitted the same day (before 11:30 pm) of teaching.

TEACHING REFLECTION (50 points)

(DUE 11:30 pm ON THE SAME DAY of your observation class in D2L.)
The prompts for the reflection paper will be provided. Use Times New Roman, 12-point font, and 2-line spacing. Length will not be considered but writing should explain/ reveal your thoughts and insights. Prompts are provided to make your reflection insightful.

TECHNOLOGY INTEGRATION CRITIQUE (50 points)

(From the submitted class videos. You will not submit any separate document for this assignment). I will provide a feedback for this assignment in the "Classroom Teaching Observation" Dropbox. However, the grade for this assignment will be given separately. This is the evaluation of the technology integration in your observed class, based on ISTE 2a and ISTE 2d. The details and the rubrics found in the corresponding module.

Field Hours.

The teacher-student should record the field-hours (along with Teacher approval) in TK20 in a timely manner

TECHNOLOGY REQUIREMENTS

LMS (Desire 2 Learn – D2L)

All course sections offered by MSU have a corresponding course shell in the D2L Online Learning Management System (LMS). See the technical requirements and associated system check in the webpage, D2L Technical Requirements

ACCESS AND NAVIGATION

You will need your username and password to log into the course. If you do not know your username or have forgotten your password, contact helpdesk@mwsu.edu. For more information on the MSU's IT services, see Information Technology.

EXTRA CREDIT

Extra Credit will not be offered in this class. Any change in this policy will be dependent upon opportunities and instructor preferences.

MAKE UP WORK/RETEST

Each assignment has to receive at least 80% to get credit for the class. You will have a chance to re-do the assignment using feedback provided ONE TIME for full credit. INCOMPLTE assignment will not be graded.

Technical Support

If you are new to D2L or if you are having technical difficulty with any part of D2L, please contact Distance Education. Other support options can be found in their webpage.

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with D2L as it provides a primary source of communication regarding assignments, examination materials, and general course information. *If you experience difficulties, please contact the technicians listed for the program or contact your instructor.* ***Do not wait till the last minute to submit the assignment. Delays or sending through email will be counted late!***

Computers are available on campus in various areas of the buildings as well as the Academic Success Center. *Again, your computer being down is not an excuse for missing a deadline!!* There are many places to access your class! If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they are able to help you get connected to our online services. For help, log into D2L.

Blank submissions or submitting wrong files in D2L

Extreme care should be taken when you submit your final document. If by any chance you submit a wrong file, make sure to submit the correct one as early as possible. All the drop-boxes are set to accept multiple files. I will evaluate the file that you submitted. If I have to notify you that you submitted the wrong file, and allow you to resubmit it, your grade will be 75% if the resubmission is within the date I would specify in the feedback.

ACADEMIC HONESTY

Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individuals to whom credit is given) will not be considered. I use turnitin for the assignments as needed and D2L directly syncs with it (you do not have to do anything). You will be able to see the plagiarism percentage and are welcome to

make changes and resubmit **BEFORE** the due date. Any plagiarism of 30% and above is too much and the assignment will not be graded, given a zero, and no make-up allowed!!!

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor Coach.

INSTRUCTOR DROP

As per the College policies, an instructor may drop a student any time during the semester for excessive absences, for consistently failing to meet class assignments, for an indifferent attitude, or for disruptive conduct. Instructor will give the student a verbal or written warning prior to dropping the student from the class. The instructor-drop takes precedence over the student-initiated course drop of a later date. The instructor will assign a grade of either WF or F through the first 8 weeks of this semester. After this period, the grade will be an F. The date the instructor drop form is received in the Office of the Registrar is the official drop date.

CHANGE OF SCHEDULE

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

REFUND AND REPAYMENT POLICY

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exist in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

DISPOSITION AND READING FEEDBACK

It is crucial that you read the feedback for your assignments and exhibit professionalism. There are a lot of moving pieces in this course such as certification requirements, IRB requirements, participants and research location, data analysis and many other things. I will support you to be successful and guide you throughout the course, however that requires you to read feedback, answer emails timely, show growth, and professionalism as needed for a masters student. The feedback will have instructions to improve your understanding of the topics that we discuss in our class, in addition to pointing out the mistakes in the submitted assignments. I am happy to meet individually via phone, virtually, or in person to discuss feedback.

ATTENDANCE/ PARTICPATION

Students should participate in all classes. Logging into D2L at least once a week and working diligently on assignments will be considered as your attendance for the week. In case of an emergency situation that will not allow you to log on to D2L, please let me know as early as possible. One week's absence will result in a loss of 20 points from your earned points. Two weeks' absences will result in 50 points loss, contact to the advisor, and alert being issued to graduate school and student services. Excessive absences might also result in instructor-drop, if required.

IMPORTANT DATES

Change of Schedule and Late Registration: August 22-25, 2022.
Final Deadline for May graduates to file for graduation: October 3, 2022
Last Day to drop with a grade of "W:" 4 pm, October24, 2022
Refer to the academic calendar for more details.

ONLINE COMPUTER REQUIREMENTS

Taking an online class requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. Assignments are due by the due date, and personal computer technical difficulties will not be considered a reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings. Computers are available on campus in various areas of the buildings including the Clark Student Center (CSC). Your computer being down is not an excuse for missing a deadline!! There are many places to access your class! Our online classes can be accessed from any computer in the world which is connected to the internet. Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student help desk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they will be able to help you get connected to our online services.

CHANGE OF SCHEDULE

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

In order to demonstrate competency, you must achieve 80% or higher on each required competency assessment.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Competency List

This course will build mastery of the following standards. The detailed breakdown of the standards across the modules are listed in the learning objectives section.

Commissioner's Standards

Commissioner's Standard 1--Instructional Planning and Delivery.

Teachers demonstrate their understanding of instructional planning and delivery by providing standards-based, data-driven, differentiated instruction that engages students, makes appropriate use of technology, and makes learning relevant for today's learners.

Commissioner's Standard 2—Knowledge of Students and Student Learning.

Teachers work to ensure high levels of learning, social-emotional development, and achievement outcomes for all students, taking into consideration each student's educational developmental backgrounds and focusing on each student's needs.

Commissioner's Standard 3— Content Knowledge and Expertise.

Teachers exhibit a comprehensive understanding of their content, discipline, and related pedagogy as demonstrated through the quality of the design and execution of lessons and their ability to match objectives and activities to relevant state standards.

Commissioner's Standard 4— Learning Environment.

Teachers interact with students in respectful ways at all times, maintaining a physically and emotionally safe, supportive learning environment that is characterized by efficient and effective routines, clear expectations for student behavior, and organization that maximizes student learning.

Commissioner's Standard 5— Data-Driven Practice.

Teachers use formal and informal methods to assess student growth aligned to instructional goals and course objectives and regularly review and analyze multiple sources of data to measure student progress and adjust instructional strategies and content delivery as needed.

Commissioner's Standard 6—Professional Practices and Responsibilities.

Teachers consistently hold themselves to a high standard for individual development, pursue leadership opportunities, collaborate with other educational professionals, communicate regularly with stakeholders, maintain professional relationships, comply with all campus and school district policies, and conduct themselves ethically and with integrity.

Content Standards PK-3 [19 TAC §235.13(d)] Science

The Early Childhood: Prekindergarten-Grade 3 classroom teachers demonstrate understanding of Kindergarten-Grade 5 Science TEKS with an emphasis on Kindergarten-Grade 3, and Science Texas Prekindergarten Guidelines and apply knowledge of developmentally appropriate,

research- and evidence-based assessment and instructional practices to promote students' development of grade-level skills

PPR PK-3 Standards.

Standard 19 TAC §235.11(b) Instructional Planning and Delivery.

Early Childhood: Prekindergarten-Grade 3 classroom teachers demonstrate understanding of instructional planning and delivery by providing standards-based, data-driven, differentiated instruction that engages students and makes learning relevant for today's learners.

Standard 19 TAC §235.11(c) Knowledge of Student and Student Learning.

Early Childhood: Prekindergarten-Grade 3 classroom teachers work to ensure high levels of learning, social-emotional development, and achievement outcomes for all students, taking into consideration each student's educational and developmental backgrounds and focusing on each student's needs.

Standard 19 TAC §235.11(d) Content Knowledge and Expertise

Early Childhood: Prekindergarten-Grade 3 classroom teachers exhibit an understanding of content, discipline, and related pedagogy as demonstrated through the quality of the design and execution of lessons and the ability to match objectives and activities to relevant state standards.

Standard 19 TAC §235.11(e) Learning Environment

Early Childhood: Prekindergarten-Grade 3 classroom teachers interact with students in respectful ways at all times, maintaining a physically and emotionally safe, supportive learning environment that is characterized by efficient and effective routines, clear expectations for student behavior, and organization that maximizes student learning.

Standard 19 TAC §235.11(f) Data-Driven Practices

Early Childhood: Prekindergarten-Grade 3 classroom teachers use formal and informal methods to assess student growth aligned to instructional goals and course objectives and regularly review and analyze multiple sources of data to measure student progress and adjust instructional strategies and content delivery as needed.

Standard 19 TAC §235.11(g) Professional Practices and Responsibilities.

Early Childhood: Prekindergarten-Grade 3 classroom teachers consistently hold themselves to a high standard for individual development, collaborate with other educational professionals, communicate regularly with stakeholders, maintain professional relationships, comply with all campus and school district policies, and conduct themselves ethically and with integrity.

Technology Applications Standards.

Standard VII

All teachers know how to plan, organize, deliver, and evaluate instruction for all students that incorporates the effective use of current technology for teaching and integrating the Technology Applications Texas Essential Knowledge and Skills (TEKS) into the curriculum:

See Appendix for TEKS and other Standards

COURSE OUTLINE

Module Topic	Topics/Materials	Assignments
M1 – The Nature of Science and Science Education	• Watch and take notes on Videos • Understand The Scientific Methods • Differentiate between Fact vs. Hypothesis vs. Law • Know the ▪ NSTA Cross-Cutting Concept Matrix ▪ Framework for K-12 Science Education ▪ Texas Essential Knowledge and Skills for Science	Writing Assignment #1: Characteristics of Science & Framework for K-12 Science Education Writing Assignment #2 Scientific Literacy (50 points each)
M2 – TEK Alignment and Content Knowledge	Use the Science TEKS T-Chart to list the science concepts of which you have solid background knowledge and which you feel are your strengths. Also use it to document the areas of weakness in which you need more study.	Writing Assignment #1: TEKs T-Chart (50 points) EDUC 4053 Content Pre-Test (34 points)
M3 – Inquiry Based Instruction	• Watch Videos, Read Articles and Understand the BSCE 5E Instructional Model • Why Use The 5E Model For Science Instruction? • Inquiry-Based Learning • STEM in Early Learning - Using Open-Ended Questions to Encourage Learning	Writing Assignment: Inquiry Based Instruction (50 points)
M4 – Creating an Inquiry Based Classroom Environment	• Creating a Positive Learning Environment • Inquiry Based Learning in the Classroom • Ways to Make an Inquiry-Based Classroom Using Technology to Teach Science	Writing Assignment: Creating and Inquiry-Based-Classroom Environment (50 points)
M5 – Teaching Science for Understanding	• Contemporary Application of Constructivism and Learning Theories in Instructional • Design Inquiry-Based Learning in the Classroom • Scaffolding in the Classroom • Constructivism in the Classroom	Writing Assignment: Teaching Science for Understanding (50 points)

	Understanding Science and how science really work	
M6 – Safety and Technology in the Science Classroom	• Safety Training Course for (upto) Middle School • Understand Lab Safety and Science Learning tools • The Value of Digital Tools in Science Classes How to Integrate Technology in Science Classroom	Flinn Lab Safety Certificate (25 points) Writing Assignment: Technology in the Science Classroom (50 points)

Module Topic	Materials to Read and Review	Assignments
Field Module – Field Hours (TK20) and Assignments related to three observations **300 points**	**Instruction Video, Notes, and other resources in the module.**	• Pre-conference – Via zoom or in-person Submit the following BEFORE pre-conference observation: • OBSERVATION LESSON PLAN Include all the documents and links related to the lesson plan in D2L. Teaching • CLASSROOM TEACHING OBSERVATION Video (DUE 11:30 pm on the day of teaching). • TEACHING REFLECTION - DUE 11:30 On the day of teaching. • TECHNOLOGY INTEGRATION Critique (DUE 11:30 the day AFTER teaching). • FINAL LESSON PLAN (you will have opportunity to revise and resubmit the final lesson plan) • Post-conference – Via zoom or in-person Upload all documentation- feedback form and reflection on TK20 AFTER ALL signatures

Module Topic	Materials to Read and Review	Assignments
FINAL PROJECT 1 and 2 **245 points**	Project Instruction in D2L module	**REQUIRED ASSIGNMENT:** Content Assessment in D2L (45 multiple Choice Questions) 5E Lesson plan after TEKS unwrapping

Tentative Course Schedule

**Subject to change as per the class and student needs

Module Topic	Due Dates	Assignments
Getting to know the Course	• Week 1	Syllabus Quiz
M1 – Review of Standards	• Due Sept 11th	Module 1 Assignment #1 Module 1 Assignment #2 (25 points each)
M2 – Mathematical Learning Foundations (Young Learners) (Includes Assessment, Using Assignments)	• Due Sept 25th	Module 2 Assignment (25 points)
Getting to know the Course	• Week 1	Syllabus Quiz
M3 – Strategies/activities in teaching mathematics to young children – Pre-Field Content Knowledge / Differentiation	• Due Oct 2nd	Module 3 Assignment (25 points)
Field Modules	• Opens AFTER Module 3 is completed All lesson, observation, reflection, and critique are **due by Nov 28th**	Lesson Plan Teaching Lesson Video Teaching lesson Reflection Technology Critique for the teaching lesson Total 300 points
M4 – Student Engagement & Instructional Resources (Include Learning Environment)	• Due Oct 23rd	Module 4 Assignment (25 points)

M5 – Developing Mathematical Thinkers	• Due Nov 6th	Module 5 Assignment (25 points)
M6 – Integrated Learning	• Due Nov 27th	Module 6 Assignment (25 points)
M7 – Professional Collaboration / Students' Background Knowledge (Families) Include research (prior knowledge, …)	• Due Dec 4th	Module 7 Assignment (25 points)
Final Project	• Opens after all 7 modules have been completed Due Dec 4th	Comprehensive Vertical Alignment Plan 200 points

Appendix: Additional Standards/Competencies

WCOE Standards

The outcomes for graduates of professional programs are based upon knowledge, skills, and dispositions in the following elements:

1. **Learner Development** - understand how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and design and implements developmentally appropriate and challenging learning experiences.
2. **Learning Differences -**understand individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
3. **Learning Environment -** work with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
4. **Content Knowledge -** understand the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make the discipline accessible and meaningful for learners to assure mastery of the content.
5. **Application of Content -** understand how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
6. **Assessment -** understand and use multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
7. **Planning for Instruction -** plan instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
8. **Instructional Strategies -** understand and use a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.
9. **Professional Learning and Ethical Practice -** engage in ongoing professional learning and use evidence to continually evaluate his or her practice, particularly the effects of his or her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.
10. **Leadership and Collaboration -** seek appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.

TEKS Standards

Pre-K

VII.A.1. Child observes, investigates describes, and discusses properties and characteristics of common objects.

VII.A.2. Child observes, investigates describes and discusses position and motion of objects.

VII.A.3. Child uses simple measuring devices to learn about objects.

VI.A.4. Child observes investigates describes and discusses sources of energy including light, heat, and electricity.
VII.B.1. Child observes, investigates, describes and discusses the characteristics of organisms.
VII.B. 2. Child describes life cycles of organisms.
VII.B.3.
Child observes, investigates, describes and discusses the relationship of organisms to their environments.
Vll.C.1.Child observes, investigates, describes and discusses earth materials, and their properties and uses.
VII.C.2.Child identifies, observes, and discusses objects in the sky.
VII.C.3. Child observes and describes what happens during changes in the earth and sky
VII.C.4. Child demonstrates the importance of caring for our environment and our planet.

Kindergarten

(a) Introduction.

(1) In Kindergarten, students observe and describe the natural world using their senses. Students do science as inquiry in order to develop and enrich their abilities to understand scientific concepts and processes. Students develop vocabulary through their experiences investigating properties of common objects, earth materials, and organisms.

(A) A central theme throughout the study of scientific investigation and reasoning; matter and energy; force, motion, and energy; Earth and space; and organisms and environment is active engagement in asking questions, creating a method to answer those questions, answering those questions, communicating ideas, and exploring with scientific tools. Scientific investigation and reasoning involves practicing safe procedures, asking questions about the natural world, and seeking answers to those questions through simple observations used in descriptive investigations.

(B) Matter is described in terms of its physical properties, including relative size, weight, shape, color, and texture. The importance of light, thermal, and sound energy is identified as it relates to the students' everyday life. The location and motion of objects are explored.

(C) Weather is recorded and discussed on a daily basis so students may begin to recognize patterns in the weather. Other patterns are observed in the appearance of objects in the sky.

(D) In life science, students recognize the interdependence of organisms in the natural world. They understand that all organisms have basic needs that can be satisfied through interactions with living and nonliving things. Students will investigate the life cycle of plants and identify likenesses between parents and offspring.

(2) Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process."

(3) Recurring themes are pervasive in sciences, mathematics, and technology. These ideas transcend disciplinary boundaries and include patterns, cycles, systems, models, and change and constancy.

(4) The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific processes, including inquiry methods, analyzing information, making informed decisions, and using tools to collect and record information, while addressing the major concepts and vocabulary, in the context of physical, earth, and life sciences. Districts are encouraged to facilitate classroom and outdoor investigations for at least 80% of instructional time.

(5) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and skills.

(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, discuss, and demonstrate safe and healthy practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately; and

(B) 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;

(C) collect data and make observations using simple tools;

(D) record and organize data and observations using pictures, numbers, and words; and

(E) communicate observations 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 and propose a solution;

(B) make predictions based on observable patterns in nature; 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 computing devices, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers; and materials to support observations of habitats of organisms such as terrariums and aquariums; and

(B) use the 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 bigger or smaller, 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 senses to explore different forms of energy such as light, thermal, 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.

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

(A) observe, describe, and sort rocks by size, shape, color, and texture;

(B) observe and describe physical properties of natural sources of water, including color and clarity; and

(C) give examples of ways rocks, soil, and water are useful.

(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) observe and describe weather changes from day to day and over seasons;

(B) identify events that have repeating patterns, including seasons of the year and day and night; and

(C) observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun.

(9) Organisms and environments. The student knows that plants and animals have basic needs and depend on the living and nonliving things around them for survival. The student is expected to:

(A) differentiate between living and nonliving things based upon whether they have basic needs and produce offspring; and

(B) examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.

(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) sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape;

(B) identify basic parts of plants and animals;

(C) identify ways that young plants resemble the parent plant; and

(D) observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit.

First Grade

(1) In Grade 1, students observe and describe the natural world using their senses. Students do science as inquiry in order to develop and enrich their abilities to understand the world around them in the context of scientific concepts and processes. Students develop vocabulary through their experiences investigating properties of common objects, earth materials, and organisms.

(A) A central theme in first grade science is active engagement in asking questions, creating a method to answer those questions, answering those questions, communicating ideas, and exploring with scientific tools in order to explain scientific concepts and processes like scientific investigation and reasoning; matter and energy; force, motion, and energy; Earth and space; and organisms and environment. Scientific investigation and reasoning involves practicing safe procedures, asking questions about the natural world, and seeking answers to those questions through simple observations used in descriptive investigations.

(B) Matter is described in terms of its physical properties, including relative size, weight, shape, color, and texture. The importance of light, thermal, and sound energy is identified as it relates to the students' everyday life. The location and motion of objects are explored.

(C) Weather is recorded and discussed on a daily basis so students may begin to recognize patterns in the weather. In addition, patterns are observed in the appearance of objects in the sky.

(D) In life science, students recognize the interdependence of organisms in the natural world. They understand that all organisms have basic needs that can be satisfied through interactions with living and nonliving things. Students will investigate life cycles of animals and identify likenesses between parents and offspring.

(2) Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process."

(3) Recurring themes are pervasive in sciences, mathematics, and technology. These ideas transcend disciplinary boundaries and include patterns, cycles, systems, models, and change and constancy.

(4) The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific processes, including inquiry methods, analyzing information, making informed decisions, and using tools to collect and record information, while addressing the major concepts and vocabulary, in the context of physical, earth, and life sciences. Districts are encouraged to facilitate classroom and outdoor investigations for at least 80% of instructional time.

(5) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and skills.

(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, discuss, and demonstrate safe and healthy practices as outlined in Texas Education agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately; and

(B) identify and learn how to use natural resources and materials, including conservation and reuse or recycling of paper, plastic, and metals.

(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;

(C) collect data and make observations using simple tools;

(D) record and organize data using pictures, numbers, and words; and

(E) communicate observations and provide reasons for explanations using student-generated data from 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 and propose a solution;

(B) make predictions based on observable patterns; and

(C) describe what 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, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums; and

(B) measure and compare organisms and objects using non-standard units.

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

(A) classify objects by observable properties such as larger and smaller, heavier and lighter, shape, color, and texture;

(B) predict and identify changes in materials caused by heating and cooling; and

(C) classify objects by the materials from which they are made.

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

(A) identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life;

(B) predict and describe how a magnet can be used to push or pull an object; and

(C) demonstrate and record the ways that objects can move such as in a straight line, zig zag, up and down, back and forth, round and round, and fast and slow.

(7) Earth and space. The student knows that the natural world includes rocks, soil, and water that can be observed in cycles, patterns, and systems. The student is expected to:

(A) observe, compare, describe, and sort components of soil by size, texture, and color;

(B) identify and describe a variety of natural sources of water, including streams, lakes, and oceans; and

(C) identify how rocks, soil, and water are used to make products.

(8) Earth and space. The student knows that the natural world includes the air around us and objects in the sky. The student is expected to:

(A) record weather information, including relative temperature such as hot or cold, clear or cloudy, calm or windy, and rainy or icy;

(B) observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun;

(C) identify characteristics of the seasons of the year and day and night; and

(D) demonstrate that air is all around us and observe that wind is moving air.

(9) Organisms and environments. The student knows that the living environment is composed of relationships between organisms and the life cycles that occur. The student is expected to:

(A) sort and classify living and nonliving things based upon whether they have basic needs and produce offspring;

(B) analyze and record examples of interdependence found in various situations such as terrariums and aquariums or pet and caregiver; and

(C) gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter.

(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) investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats;

(B) identify and compare the parts of plants;

(C) compare ways that young animals resemble their parents; and

(D) observe and record life cycles of animals such as a chicken, frog, or fish.

Second Grade

(a) Introduction.

(1) In Grade 2, careful observation and investigation are used to learn about the natural world and reveal patterns, changes, and cycles. Students should understand that certain types of questions can be answered by using observation and investigations and that the information gathered in these investigations may change as new observations are made. As students participate in investigation, they develop the skills necessary to do science as well as develop new science concepts.

(A) A central theme throughout the study of scientific investigation and reasoning; matter and energy; force, motion, and energy; Earth and space; and organisms and environment is active engagement in asking questions, creating a method to answer those questions, answering those questions, communicating ideas, and exploring with scientific tools. Scientific investigation and reasoning involves practicing safe procedures, asking questions about the natural world, and seeking answers to those questions through simple observations used in descriptive investigations.

(B) Within the physical environment, students expand their understanding of the properties of objects such as temperature, shape, and flexibility then use those properties to compare, classify,

and then combine the objects to do something that they could not do before. Students manipulate objects to demonstrate a change in motion and position.

(C) Within the natural environment, students will observe the properties of earth materials as well as predictable patterns that occur on Earth and in the sky. The students understand that those patterns are used to make choices in clothing, activities, and transportation.

(D) Within the living environment, students explore patterns, systems, and cycles by investigating characteristics of organisms, life cycles, and interactions among all the components within their habitat. Students examine how living organisms depend on each other and on their environment.

(2) Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process."

(3) Recurring themes are pervasive in sciences, mathematics, and technology. These ideas transcend disciplinary boundaries and include patterns, cycles, systems, models, and change and constancy.

(4) The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific processes, including inquiry methods, analyzing information, making informed decisions, and using tools to collect and record information, while addressing the major concepts and vocabulary, in the context of physical, earth, and life sciences. Districts are encouraged to facilitate classroom and outdoor investigations for at least 60% of instructional time.

(5) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and skills.

(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, describe, and demonstrate safe practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately; and

(B) 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;

(C) collect data from observations using scientific 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 and propose a task and solution for the problem;

(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, plastic beakers, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; 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.

(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:

(A) classify matter by physical properties, including relative temperature, texture, flexibility, and whether material is a solid or liquid;

(B) compare changes in materials caused by heating and cooling;

(C) demonstrate that things can be done to materials such as cutting, folding, sanding, and melting to change their physical properties; and

(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.

(6) Force, motion, and energy. The student knows that forces cause change and energy exists in many forms. The student is expected to:

(A) investigate the effects on objects by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter;

(B) observe and identify how magnets are used in everyday life; and

(C) trace and compare patterns of movement of objects such as sliding, rolling, and spinning over time.

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

(A) observe, describe, and compare 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; and

(C) 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 the ways living organisms depend on each other and on their environments such as through food chains.

(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;

(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 such as grasshoppers and butterflies undergo during their life cycle.

Third Grade

(a) Introduction.

(1) In Grade 3, students learn that the study of science uses appropriate tools and safe practices in planning and implementing investigations, asking and answering questions, collecting data by observing and measuring, and using models to support scientific inquiry about the natural world.

(A) Within the physical environment, students recognize that patterns, relationships, and cycles exist in matter. Students will investigate the physical properties of matter and will learn that changes occur. They explore mixtures and investigate light, sound, and thermal energy in everyday life. Students manipulate objects by pushing and pulling to demonstrate changes in motion and position.

(B) Within the natural environment, students investigate how the surface of Earth changes and provides resources that humans use. As students explore objects in the sky, they describe how relationships affect patterns and cycles on Earth. Students will construct models to demonstrate Sun, Earth, and Moon system relationships.

(C) Within the living environment, students explore patterns, systems, and cycles within environments by investigating characteristics of organisms, life cycles, and interactions among all components of the natural environment. Students examine how the environment plays a key role in survival. Students know that when changes in the environment occur organisms may thrive, become ill, or perish.

(2) Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process."

(3) Recurring themes are pervasive in sciences, mathematics, and technology. These ideas transcend disciplinary boundaries and include patterns, cycles, systems, models, and change and constancy.

(4) The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific practices, analyzing information, making informed decisions, and using tools to collect and record information while addressing the content and vocabulary in physical, earth, and life sciences. Districts are encouraged to facilitate classroom and outdoor investigations for at least 60% of instructional time.

(5) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and skills.

(1) Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate practices. The student is expected to:

(A) demonstrate safe practices as described in Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment as appropriate, including safety goggles or chemical splash goggles, as appropriate, and gloves; and

(B) make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics.

(2) Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations. The student is expected to:

(A) plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world;

(B) collect and record data by observing and measuring using the metric system and recognize differences between observed and measured data;

(C) construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data;

(D) analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations;

(E) demonstrate that repeated investigations may increase the reliability of results; and

(F) communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.

(3) Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:

(A) analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing;

(B) represent the natural world using models such as volcanoes or the Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials; and

(C) connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

(4) Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to collect, record, and analyze information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums.

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

(A) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float;

(B) describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container;

(C) predict, observe, and record changes in the state of matter caused by heating or cooling such as ice becoming liquid water, condensation forming on the outside of a glass of ice water, or liquid water being heated to the point of becoming water vapor; and

(D) explore and recognize that a mixture is created when two materials are combined such as gravel and sand or metal and plastic paper clips.

(6) Force, motion, and energy. The student knows that forces cause change and that energy exists in many forms. The student is expected to:

(A) explore different forms of energy, including mechanical, light, sound, and thermal in everyday life;

(B) demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons; and

(C) observe forces such as magnetism and gravity acting on objects.

(7) Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing. The student is expected to:

(A) explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains;

(B) investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides; and

(C) explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved.

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

(A) observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation;

(B) describe and illustrate the Sun as a star composed of gases that provides light and thermal energy;

(C) construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions; and

(D) identify the planets in Earth's solar system and their position in relation to the Sun.

(9) Organisms and environments. The student knows and can describe patterns, cycles, systems, and relationships within the environments. The student is expected to:

(A) observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem;

(B) identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field; and

(C) describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations.

(10) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:

(A) explore how structures and functions of plants and animals allow them to survive in a particular environment; and

(B) investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles.

All Pre-K- 3 Teacher Preparation Standards

Domain I—Child Development

Competency 001—(Foundations of Child Development): Understand foundational concepts of early childhood development from birth to age 8 and factors that influence student development.

For example: A. Demonstrate knowledge of key theoretical foundations, curriculum and program models, and scientifically based research regarding the development and learning of students from birth to age 8 (e.g., Bruner,Piaget, and Vygotsky; Montessori, Reggio Emilia, constructivist, social-learning, and environmental theories) upon which developmentally appropriate practices in early childhood education are based.

B. Demonstrate knowledge of characteristics, progressions, and variations of development in the physical, cognitive, social, language, sensory, aesthetic, and emotional domains and of the interrelationships between these domains and student learning.

C. Demonstrate knowledge of exceptionalities, including common health conditions, and factors related to over-and underrepresentation of specific student populations in special education and gifted and talented programs and use this knowledge to promote child development, learning, social skills, and emotional resilience skills for all students.

D. Demonstrate knowledge of the specific needs of English learners (ELs) and of practices that build on home language systems to develop academic and social skills.

Competency 002—(The Early Learning Process): Understand the developmental processes and characteristics of learning of young children from birth to age 8.

For example: A. Demonstrate knowledge of the learning processes of young children, including the multiple functions, value, and role of play in constructing knowledge, building social skills and relationships, and developing problem-solving skills.

B. Demonstrate knowledge of the continuum of teaching strategies for promoting learning—from childinitiated activities to adult-guided instruction; methods to capitalize on incidental and spontaneous opportunities for teaching; and ways to use the environment, daily routines, and interactions to support learning and development (e.g., developmentally appropriate homework practices).

C. Demonstrate knowledge of the influence of stress and trauma, protective factors, resilience, and supportive relationships on the cognitive and emotional development of young children.

D. Demonstrate knowledge of risk factors impacting mental health in young children, including identifying behaviors that signify the need to intervene and/or engage in collaboration with others in order to provide responsive and developmentally appropriate intervention and support.

E. Demonstrate knowledge of methods for identifying students' readiness for learning and understand how development in one area may affect students' learning and performance in other areas.

F. Demonstrate knowledge of the roles of parents/guardians as primary caregivers and informal teachers of children, including factors in the home and community that may affect children's development and learning.

Competency 003—(Family Engagement): Understand the role and importance of the family in supporting the learning and development of young children from prekindergarten to grade 3.

For example: A. Demonstrate knowledge of how to create meaningful, respectful, and reciprocal relationships for families and how to use family-centered strategies to promote effective, ongoing communication and involvement with families to support young children's learning and social skills and emotional development.

B. Apply knowledge of skills and strategies for working collaboratively and effectively with families, including families with linguistically and culturally diverse backgrounds, and of how to build positive relationships by advocating for families and by respecting and valuing families' preferences and goals.

C. Demonstrate knowledge of evidence-based practices that support families in meeting their children's learning benchmarks and provide families with tools to enhance and extend children's learning at home (e.g., home visits by teachers and school staff, consistent in-person and written communication on student progress).

Domain II—The Instructional Setting

Competency 004—(Social Skills, Emotional Development, and Behavior Support): Understand how to create positive environments and relationships that help develop interpersonal skills, autonomy, and initiative to explore and learn in young children from prekindergarten to grade 3.

For example: A. Demonstrate knowledge of factors related to the development of executive function and self-regulation skills in young children, including motivation, autonomy, and decision-making and self-help skills.

B. Apply knowledge of strategies and principles for teaching and using problem-solving and conflict resolution skills and for providing individual and schoolwide positive behavioral interventions and supports (PBIS), including monitoring the effectiveness of PBIS, as well as making modifications and adaptations to interventions as needed.

C. Demonstrate knowledge of developmentally appropriate and effective individual and group management strategies, including best practices for teaching and supporting young children with additional behavioral needs and factors contributing to equitable and inequitable responses to behavior.

D. Demonstrate knowledge of the role of positive relationships and supportive interactions as a crucial foundation for teaching, and in developing social skills and emotional resilience, with a focus on children's individual strengths, needs, and interests.

E. Demonstrate knowledge of the relationships between communication, behavior, and learning, as well as the ability to use developmentally appropriate and culturally responsive positive behavior strategies, conflict resolution skills, and instructional methods to manage classroom behavior

Competency 005—(The Instructional Setting): Understand how to create positive learning environments that promote the development and learning of young children in prekindergarten to grade 3.

For example: A. Apply knowledge of strategies for structuring the physical environment and selecting appropriate learning curricula, materials, and technologies to promote active participation and independence in young children.

B. Apply knowledge of practices for creating and adapting safe indoor and outdoor learning environments that encourage active involvement, initiative, responsibility, and a growing sense of autonomy in young children.

C. Apply knowledge of the use of schedules, routines, and effective transitions to support children's emotional development, effectively manage instructional activities, and promote children's sense of security and independence.

D. Apply knowledge of methods for creating a physical environment and instructional procedures that are linguistically and culturally responsive and meet the needs of all young children, including those with exceptionalities (e.g., disabilities, gifts, talents) and English learners (ELs).

E. Demonstrate knowledge of practices and procedures for effectively planning and managing flexible student groupings, including pairings, individualized, and small-group instruction, to facilitate learning.
F. Demonstrate knowledge of activities, practices, materials, and technology to support the integration of oral, written, graphic, kinesthetic, and tactile methods into the teaching of key concepts and vocabulary and to assess student learning.

Domain III—Educating All Learners

Competency 006—(Differentiation Strategies in Planning and Practice): Understand how to identify and implement developmentally appropriate strategies and practices to effectively teach and engage young children from prekindergarten to grade 3.

For example: A. Demonstrate knowledge of the principles of universal design for learning (UDL) and how to apply UDL guidelines to incorporate the flexibility necessary to maximize learning opportunities for all students.
B. Apply knowledge of effective methods for fostering students' active participation and individual academic success in one-to-one, small-group, and large-group settings and for facilitating students' inclusion in various settings (e.g., academic, social).
C. Apply knowledge of activities and instruction that build on students' individual interests, primary language, experiences, and prior knowledge; respond to students' strengths and needs; and promote the development of prerequisite skills and positive dispositions toward learning in the content areas.
D. Demonstrate knowledge of how and when to adjust and scaffold instruction, instructional activities, and assessment in response to various types of feedback from young children.
E. Demonstrate knowledge of how to identify, select, and implement appropriate and effective accommodations for students with 504 plans or Individualized Education Programs (IEPs), including collaborating with other professionals to meet the needs of all students.
F. Demonstrate knowledge of the various categories of disabilities as outlined in the Individuals with Disabilities Education Act (IDEA), including Child Find obligations and educational implications specific to young children with unique learning differences (e.g., developmental delays, autism spectrum disorder, dyslexia, intellectual disabilities).

Competency 007—(Culturally Responsive Practices): Understand how to identify and implement culturally responsive, developmentally appropriate practices to effectively teach and engage young children from prekindergarten to grade 3 across all content areas.

For example: A. Demonstrate knowledge of strategies and practices that acknowledge and respect diversity (e.g., cultural, economic, linguistic) and support inclusion in order to promote students' overall development and learning, including understanding of the benefits of primary and secondary languages and bilingualism to learning.

B. Recognize the role personal bias plays in potential learning expectations for students in order to promote safe, positive, and supportive interactions and learning environments for all students.
C. Demonstrate knowledge of activities, approaches, and resources that encourage and support exploration and engagement and promote a positive disposition toward learning for all students.
D. Demonstrate understanding of the role of language and culture in learning, as well as how to modify instruction to support language acquisition to ensure that both language and instruction are accessible across the content areas.
E. Demonstrate knowledge of ways to work collaboratively with parents/guardians, teachers, school and community service providers, and students to support all students, including but not limited to English learners (ELs), and programs such as ESL, bilingual, and dual language.
F. Demonstrate knowledge of ways to work collaboratively with teachers, related service providers, parents/guardians, and students to effectively support the implementation of an Individualized Education Program (IEP) and instructional accommodations and strategies.

Domain IV—Data-Driven Practice and Formal/Informal Assessment

Competency 008—(Developmentally Appropriate Assessment and Practice): Understand the types, selection, and uses of developmentally appropriate assessments and assessment practices to effectively support young children's learning in prekindergarten to grade 3.

For example: A. Demonstrate knowledge of the various purposes of the use of developmentally appropriate assessment for evaluating young students across domains.
B. Apply knowledge of basic assessment terminology and of types, characteristics, uses, and limitations of formal, informal, and alternative assessments (e.g., developmental screenings, formative and summative assessments, observations, portfolios, state-mandated assessments, types of assessment accommodations, curriculum-based measures).
C. Apply knowledge of ways to develop and select developmentally appropriate assessments and assessment strategies (e.g., use of TEA resources such as formative assessment banks), ensure that assessments are aligned to instructional objectives and outcomes, and use assessment results to inform instruction and measure student progress throughout the content areas.
D. Apply knowledge of considerations and strategies for effectively administering assessments and documenting assessment outcomes.
E. Recognize legal and ethical issues related to assessment, responsible assessment practices, and confidentiality.

Competency 009—(Progress Monitoring and Data-Driven Instructional Practice): Understand how to design, implement, and evaluate learning experiences and instruction in order to promote development and learning of all students in prekindergarten to grade 3.

For example: A. Demonstrate knowledge of the foundational elements of Response to Intervention (RtI) and the ability to apply this knowledge to differentiate tiered instruction for all students based on data.

B. Interpret and use information from formal and informal assessments, including the use of multiple measures of assessment, to inform decisions and plan and evaluate student learning.

C. Interpret assessment results to enhance knowledge of students; evaluate and monitor development, learning, and progress; establish goals; and plan, differentiate, and continuously adjust learning activities and environments for individuals and groups.

D. Demonstrate knowledge of a variety of types of systematic observation and documentation (e.g., anecdotal notes, checklists, data collection) and the ability to use these processes and procedures to gain insight into students' development, strengths, needs, and learning.

Domain V—Learning Across the Curriculum

Competency 010—(English Language Arts and Social Studies): Understand the foundational principles, concepts, and methods in English language arts and social studies to provide developmentally appropriate instruction for students in prekindergarten to grade 3.

Competency 011—(Mathematics): Understand foundational principles, concepts, and methods in mathematics to provide developmentally appropriate instruction for students in prekindergarten to grade 3.

Competency 012—(Science and Technology Applications): Understand the foundational principles, concepts, and methods of teaching science and technology applications to provide developmentally appropriate instruction to students in prekindergarten to grade 3.

1. Demonstrate knowledge of the Science domain of the *Texas Prekindergarten Guidelines* and of the Texas Essential Knowledge and Skills (TEKS) for Science (Kindergarten through Grade 5), as well as ways to scaffold and sequence skills and concepts to teach science to young children.
2. Apply knowledge of how to plan and implement inquiry-based science lessons that are responsive to children's diverse interests, knowledge, skills, and experiences and that promote children's development of scientific knowledge, inquiry, and skills.
3. Demonstrate knowledge of developmentally appropriate strategies for encouraging children to explore and make discoveries about their world (e.g., exploratory play, using senses, using simple tools or technology to gain information about environment, incorporating children's literature, making predictions and/or drawing conclusions on the basis of observation).

4. Demonstrate knowledge of instructional resources, tools and materials, including technology, for teaching science and procedures for ensuring the proper use of safety equipment and safe practices during classroom science activities.
5. Apply knowledge of key concepts of physical science, Earth and space science, and life science to select strategies and methods for developing children's knowledge and skills in these areas through a variety of developmentally appropriate, meaningful, authentic learning experiences and real-world applications.
6. Apply knowledge of developmentally appropriate strategies for encouraging students to view themselves as competent scientific explorers and activities for promoting students' ability to think and communicate scientific knowledge through written expression (e.g., providing opportunities to observe and describe objects and phenomena; engaging in simple investigation; applying skills such as collecting, classifying, and interpreting data; recognizing patterns and drawing conclusions).
7. Demonstrate knowledge of developmentally appropriate strategies and procedures for implementing scientific inquiry methods in classroom laboratory and outdoor investigations, including understanding and applying terminology common to scientific investigations.
8. Demonstrate knowledge of types of digital tools and resources and strategies for using them to enhance teaching effectiveness, create learning experiences that facilitate creativity, and promote student achievement across the content areas.
9. Demonstrate knowledge of developmentally appropriate digital tools and resources and strategies to help children explore real-world issues, solve authentic problems, develop global awareness, participate in local and global learning communities, and develop the ability to pursue and manage their own learning, while understanding safety and privacy risks.

Competency 013—(Fine Arts, Physical Education, and Health): Understand foundational skills, concepts, and methods to provide developmentally appropriate instruction for fine arts, physical education, and health to students in prekindergarten to grade 3.

Domain VI—Analysis and Response

Competency 014—(Analysis and Response): In a written response, analyze and interpret qualitative and quantitative data to identify a given student's strengths and needs and design developmentally appropriate instruction.

For example: A. Demonstrate the ability to analyze and interpret formative and summative observational and assessment data for a given student in order to select and accurately describe a significant strength or need that the student demonstrates related to a foundational English language arts, mathematics, or science skill or objective.
B. Demonstrate the ability to select and accurately describe a developmentally appropriate, effective instructional strategy, intervention, or enrichment to build on a

student's identified strength or address a student's identified need in the foundational English language arts, mathematics, or science skill or objective.

C. Using sound reasoning and knowledge of foundational English language arts, mathematics, or science skills, demonstrate the ability to explain the effectiveness of the selected instructional strategy, intervention, or enrichment to build on a student's identified strength and/or address a student's identified need.

D. Demonstrate the ability to select and accurately describe a developmentally appropriate method of informal assessment to effectively monitor the student's progress toward the identified learning skill or objective.

E. Demonstrate the ability to explain how the specific learning skill or objective in foundational English language arts, mathematics, or science can be integrated in other areas of the curriculum to support the generalization or enrichment of the identified learning skill or objective.

Technology Standards Complete List

Kindergarten

(1) Technology includes data communication, data processing, and the devices used for these tasks locally and across networks. Learning to apply these technologies motivates students to develop critical-thinking skills, higher-order thinking, and innovative problem solving. Technology applications incorporates the study of digital tools, devices, communication, and programming to empower students to apply current and emerging technologies in their careers, their education, and beyond.

(2) The technology applications Texas Essential Knowledge and Skills (TEKS) consist of five strands that prepare students to be literate in technology applications by Grade 8: computational thinking; creativity and innovation; data literacy, management, and representation; digital citizenship; and practical technology concepts. Communication and collaboration skills are embedded across the strands.

(A) Computational thinking. Students break down the problem-solving process into four steps: decomposition, pattern recognition, abstraction, and algorithms.

(B) Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students plan a solution, create the solution, test the solution, iterate, and debug the solution as needed and implement a completely new and innovative product.

(C) Data literacy, management, and representation. Students collect, organize, manage, analyze, and publish various types of data for an audience.

(D) Digital citizenship. Students practice the ethical and effective application of technology and develop an understanding of cybersecurity and the impact of a digital footprint to become safe, productive, and respectful digital citizens.

(E) Practical technology concepts. Students build their knowledge of software applications and hardware focusing on keyboarding and use of applications and tools.

(3) The technology applications TEKS can be integrated into all content areas and can support stand-alone courses. Districts have the flexibility of offering technology applications in a variety

of settings, including through a stand-alone course or by integrating the technology applications standards in the essential knowledge and skills for one or more courses or subject areas.

(4) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

First Grade

(1) Technology includes data communication, data processing, and the devices used for these tasks locally and across networks. Learning to apply these technologies motivates students to develop critical-thinking skills, higher-order thinking, and innovative problem solving. Technology applications incorporates the study of digital tools, devices, communication, and programming to empower students to apply current and emerging technologies in their careers, their education, and beyond.

(2) The technology applications Texas Essential Knowledge and Skills (TEKS) consist of five strands that prepare students to be literate in technology applications by grade 8: computational thinking; creativity and innovation; data literacy, management, and representation; digital citizenship; and practical technology concepts. Communication and collaboration skills are embedded across the strands.

(A) Computational thinking. Students break down the problem-solving process into four steps: decomposition, pattern recognition, abstraction, and algorithms.

(B) Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students plan a solution, create the solution, test the solution, iterate, and debug the solution as needed, and implement a completely new and innovative product.

(C) Data literacy, management, and representation. Students collect, organize, manage, analyze, and publish various types of data for an audience.

(D) Digital citizenship. Students practice the ethical and effective application of technology and develop an understanding of cybersecurity and the impact of a digital footprint to become safe, productive, and respectful digital citizens.

(E) Practical technology concepts. Students build their knowledge of software applications and hardware focusing on keyboarding and use of applications and tools.

(3) The technology applications TEKS can be integrated into all content areas and can support stand-alone courses. Districts have the flexibility of offering technology applications in a variety of settings, including through a stand-alone course or by integrating the technology applications standards in the essential knowledge and skills for one or more courses or subject areas.

(4) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

Second Grade

(1) Technology includes data communication, data processing, and the devices used for these tasks locally and across networks. Learning to apply these technologies motivates students to develop critical-thinking skills, higher-order thinking, and innovative problem solving. Technology applications incorporates the study of digital tools, devices, communication, and

programming to empower students to apply current and emerging technologies in their careers, their education, and beyond.

(2) The technology applications Texas Essential Knowledge and Skills (TEKS) consist of five strands that prepare students to be literate in technology applications by grade 8: computational thinking; creativity and innovation; data literacy, management, and representation; digital citizenship; and practical technology concepts. Communication and collaboration skills are embedded across the strands.

(A) Computational thinking. Students break down the problem-solving process into four steps: decomposition, pattern recognition, abstraction, and algorithms.

(B) Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students plan a solution, create the solution, test the solution, iterate, and debug the solution as needed, and implement a completely new and innovative product.

(C) Data literacy, management, and representation. Students collect, organize, manage, analyze, and publish various types of data for an audience.

(D) Digital citizenship. Students practice the ethical and effective application of technology and develop an understanding of cybersecurity and the impact of a digital footprint to become safe, productive, and respectful digital citizens.

(E) Practical technology concepts. Students build their knowledge of software applications and hardware focusing on keyboarding and use of applications and tools.

(3) The technology applications TEKS can be integrated into all content areas and can support stand-alone courses. Districts have the flexibility of offering technology applications in a variety of settings, including through a stand-alone course or by integrating the technology applications standards in the essential knowledge and skills for one or more courses or subject areas.

(4) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

Third Grade

(1) Technology includes data communication, data processing, and the devices used for these tasks locally and across networks. Learning to apply these technologies motivates students to develop critical-thinking skills, higher-order thinking, and innovative problem solving. Technology applications incorporates the study of digital tools, devices, communication, and programming to empower students to apply current and emerging technologies in their careers, their education, and beyond.

(2) The technology applications Texas Essential Knowledge and Skills (TEKS) consist of five strands that prepare students to be literate in technology applications by Grade 8: computational thinking; creativity and innovation; data literacy, management, and representation; digital citizenship; and practical technology concepts. Communication and collaboration skills are embedded across the strands.

(A) Computational thinking. Students break down the problem-solving process into four steps: decomposition, pattern recognition, abstraction, and algorithms.

(B) Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students plan a solution, create the solution, test the solution, iterate, and debug the solution as needed, and implement a completely new and innovative product.

(C) Data literacy, management, and representation. Students collect, organize, manage, analyze, and publish various types of data for an audience.

(D) Digital citizenship. Students practice the ethical and effective application of technology and develop an understanding of cybersecurity and the impact of a digital footprint to become safe, productive, and respectful digital citizens.

(E) Practical technology concepts. Students build their knowledge of software applications and hardware focusing on keyboarding and use of applications and tools. Students also build their knowledge and use of technology systems, including integrating the use of multiple applications.

(3) The technology applications TEKS can be integrated into all content areas and can support stand-alone courses. Districts have the flexibility of offering technology applications in a variety of settings, including through a stand-alone course or by integrating the technology applications standards in the essential knowledge and skills for one or more courses or subject areas.

(4) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

Pedagogy and professional Responsibilities Standards (EC-12)

Standard I.* The teacher designs instruction appropriate for all students that reflects an understanding of relevant content and is based on continuous and appropriate assessment.

Students

The beginning teacher knows and understands:

1.1k the intellectual, social, physical, and emotional developmental characteristics of students in different age groups;

1.2k the implications of students' developmental characteristics for planning appropriate instruction;

1.3k characteristics and instructional needs of students with varied backgrounds, skills, interests, and learning needs;

1.4k different approaches to learning that students may exhibit and what motivates students to become active, engaged learners;

1.5k cultural and socioeconomic differences and the significance of these differences for instructional planning; and

1.6k appropriate strategies for instructing English language learners.

The beginning teacher is able to:

1.1s plan lessons that reflect an understanding of students' developmental characteristics and needs;

1.2s adapt lessons to address students' varied backgrounds, skills, interests, and learning needs, including the needs of English language learners;

1.3s use effective approaches to address varied student learning needs and preferences;

1.4s plan instruction that motivates students to want to learn and achieve; and

1.5s acknowledge and respect cultural and socioeconomic differences among students when planning instruction.

Content and Pedagogy

The beginning teacher knows and understands:

1.7k the importance of the state content and performance standards as outlined in the Texas Essential Knowledge and Skills (TEKS);

1.8k relevant content of the discipline being taught, including concepts, principles, relationships, methods of inquiry, and key issues;

1.9k the significance of the vertical alignment of content, including prerequisite knowledge and skills;

1.10k how lesson content and skills connect with other disciplines and within the discipline; and

1.11k current research on best pedagogical practices.

The beginning teacher is able to:

1.6s use the Texas Essential Knowledge and Skills (TEKS) to plan instruction;

1.7s exhibit appropriate knowledge of a subject to promote student learning;

1.8s demonstrate awareness of common student misconceptions or likely sources of student error in relation to particular content;

1.9s plan instruction that reflects an understanding of important prerequisite relationships;

1.10s plan instruction that makes connections within the discipline and across disciplines; and

1.11s use a variety of pedagogical techniques to convey information and teach skills.

Selection of Instructional Goals and Objectives

The beginning teacher knows and understands:

1.12k the importance of developing instructional goals and objectives that are clear, relevant, meaningful, and age-appropriate;

1.13k the importance of developing instructional goals and objectives that can be assessed;

1.14k the importance of developing instructional goals and objectives that are suitable for students with varied learning needs; and

1.15k the importance of aligning instructional goals with campus and district goals.

The beginning teacher is able to:

1.12s develop instructional goals and objectives that are clear, relevant, meaningful, and age-appropriate;

1.13s develop instructional goals and objectives that are able to be assessed;

1.14s develop instructional goals and objectives that reflect students' age, develop mental level, prior skills and knowledge, background, and interests; and

1.15s develop instructional goals and objectives that reflect different types of student learning and skills.

Resources

The beginning teacher knows and understands:

1.16k the use of appropriate materials and resources for preparing instruction, presenting lessons, and assessing learning;

1.17k the importance of knowing when to integrate technology into instruction and assessment; and

1.18k the use of resources beyond the campus to help students meet academic and nonacademic needs.

The beginning teacher is able to:

1.16s use various types of materials and other resources to aid in preparing and implementing instruction;

1.17s use technological tools to promote learning and expand instructional options; and

1.18s use resources available outside the school (e.g., museums, businesses, community members) to enhance students' learning opportunities.

Designing Coherent Instruction

The beginning teacher knows and understands:

1.19k the importance of designing instruction that reflects the TEKS;

1.20k features of instruction that maximize students' thinking skills;

1.21k the importance of planning lessons and structuring units so that activities progress in a logical sequence;

1.22k how materials, technology, and other resources may be used to support instructional goals and objectives and engage students in meaningful learning;

1.23k the benefits of designing instruction that integrates content across disciplines; and

1.24k the importance of engaging in continuous monitoring and self-assessment of instructional effectiveness.

The beginning teacher is able to:

1.19s plan instructional activities that progress sequentially and support stated instructional goals based on the TEKS;

1.20s select instructional resources that support instructional goals, enhance student achievement, and engage students in learning;

1.21s use varied activities and instructional groupings to engage students in instructional content and meet instructional goals and objectives;

1.22s allocate time appropriately within lessons and units, including providing adequate opportunities for students to engage in reflection and closure; and

1.23s provide students with opportunities to explore content from many perspectives.

Assessment of Student Learning

The beginning teacher knows and understands:

1.25k the role of assessment in guiding instructional planning;

1.26k the importance of creating assessments that are congruent with instructional goals and objectives;

1.27k the characteristics, uses, advantages, and limitations of various assessment methods and strategies;

1.28k the role of technology in assessing student learning;

1.29k the benefits of and strategies for promoting student self-assessment;

1.30k the connection between the Texas statewide assessment program, the TEKS, and instruction; and

1.31k how to analyze data from local, state, and other assessments using common statistical measures.

The beginning teacher is able to:

1.24s use a variety of assessment methods, including technology, that are appropriate for evaluating student achievement of instructional goals and objectives;

1.25s communicate assessment criteria and standards to students;

1.26s design assessments, where appropriate, that reflect real-world applications of knowledge and understanding;

1.27s promote students' use of self-monitoring and self-assessment;

1.28s analyze assessment results to aid in determining students' strengths and needs; and

1.29s use assessment results to help plan instruction for groups of students or individuals.

Standard II. **The teacher creates a classroom environment of respect and rapport that fosters a positive climate for learning, equity, and excellence.**

Creating an Environment of Respect and Rapport

The beginning teacher knows and understands:

2.1k the importance of creating a learning environment in which diversity and individual differences are respected;

2.2k the impact of teacher-student interactions and interactions among students on classroom climate and student learning and development; and

2.3k ways to establish a positive classroom climate that fosters active engagement in learning among students.

The beginning teacher is able to:

2.1s interact with students in ways that reflect support and show respect for all students;

2.2s use strategies to ensure that interactions among students are polite, respectful, and cooperative; and

2.3s use strategies to ensure that the classroom environment and interactions among individuals and groups within the classroom promote active engagement in learning.

Establishing an Environment for Learning and Excellence

The beginning teacher knows and understands:

2.4k the importance of communicating enthusiasm for learning; and

2.5k the necessity of communicating teacher expectations for student learning.

The beginning teacher is able to:

2.4s communicate to all students the importance of instructional content and the expectation of high-quality work; and

2.5s ensure that instructional goals and objectives, activities, classroom interactions, assessments, and other elements of the classroom environment convey high expectations for student achievement.

Managing Classroom Procedures

The beginning teacher knows and understands:

2.6k how classroom routines and procedures affect student learning and achievement;

2.7k how to organize student groups to facilitate cooperation and productivity;

2.8k the importance of time management for effective classroom functioning;

2.9k procedures for managing transitions;

2.10k routines and procedures for managing and using materials, supplies, and technology;

2.11k noninstructional duties (e.g., taking attendance) and procedures for performing these duties effectively; and

2.12k the classroom roles of paraprofessionals, volunteers, and other professionals, including substitute teachers, in accordance with district policies and procedures.

The beginning teacher is able to:

2.6s establish classroom rules and procedures to promote an organized and productive learning environment;

2.7s organize and manage groups to ensure that students work together cooperatively and productively;

2.8s schedule activities and manage class time in ways that maximize student learning;

2.9s manage transitions to maximize instructional time;

2.10s implement routines and procedures for the effective management of materials, supplies, and technology;

2.11s coordinate the performance of noninstructional duties with instructional activities;

2.12s monitor the performance of volunteers and paraprofessionals in the classroom in accordance with district policies and procedures; and

2.13s use volunteers and paraprofessionals to enhance and enrich instruction, and evaluate their effectiveness.

Managing Student Behavior

The beginning teacher knows and understands:

2.13k theories and techniques relating to managing and monitoring student behavior;

2.14k appropriate behavior standards and expectations for students at various developmental levels;

2.15k the significance of district policies and procedures for managing student behavior and ensuring ethical behavior in the classroom;

2.16k the importance of establishing classroom standards of student conduct and clear consequences for inappropriate behavior;

2.17k the value of encouraging students to work in an ethical manner and monitor their own behavior; and

2.18k appropriate responses to a variety of student behaviors and misbehaviors.

The beginning teacher is able to:

2.14s communicate high and realistic expectations for students' behavior and ensure that students understand behavior expectations and consequences for misbehavior;

2.15s consistently enforce standards and expectations for student behavior and ethical work habits;

2.16s encourage students to maintain ethical work standards and monitor their own behavior; and

2.17s use effective methods and procedures for monitoring and responding to positive and negative student behaviors.

Maintaining a Physical and Emotional Environment that is Safe and Productive

The beginning teacher knows and understands:

2.19k features and characteristics of physical spaces that are safe and productive for learning;

2.20k the benefits and limitations of various arrangements of furniture in the classroom;

2.21k procedures for ensuring safety in the classroom;

2.22k physical accessibility as a potential issue in student learning; and

2.23k students' emotional needs and ways to address needs.

The beginning teacher is able to:

2.18s organize the physical environment to facilitate learning;

2.19s create a safe and inclusive classroom environment;

2.20s use effective strategies for creating and maintaining a positive classroom environment; and

2.21s respect students ' rights and dignity.

Standard III. **The teacher promotes student learning by providing responsive instruction that makes use of effective communication techniques, instructional strategies that actively engage students in the learning process, and timely, high-quality feedback.**

Communication

The beginning teacher knows and understands:

3.1k the importance of clear, accurate communication in the teaching and learning process;

3.2k principles and strategies for communicating effectively in varied teaching and learning contexts;

3.3k spoken and written language that is appropriate to students ' ages, interests, and backgrounds; and

3.4k skills and strategies for engaging in skilled questioning and leading effective student discussions.

The beginning teacher is able to:

3.1s communicate directions, explanations, and procedures clearly, accurately, and with an appropriate level of detail, both orally and in writing;

3.2s use effective interpersonal skills (including both verbal and nonverbal skills) to reach students and communicate the teacher's commitment to students;

3.3s use spoken and written language that is appropriate to students' ages, interests, and backgrounds;

3.4s use effective communication techniques, including questioning and discussion techniques, to foster active student inquiry, higher-order thinking, problem solving, and productive, supportive interactions;

3.5s use carefully framed questions to enable students to reflect on their understanding of content and to consider new possibilities; and

3.6s apply skills for leading discussions that engage all students in exploring important questions and that extend students' knowledge.

Engaging Students in Learning

The beginning teacher knows and understands:

3.5k criteria for selecting appropriate instructional activities and assignments for students with varied characteristics and needs;

3.6k how to present content to students in relevant and meaningful ways;

3.7k the use of instructional materials, resources, and technologies that are appropriate and engaging for students in varied learning situations;

3.8k the importance of promoting students' intellectual involvement with content and their active development of understanding;

3.9k strategies and techniques for using instructional groupings to promote student learning;

3.10k different types of motivation, factors affecting student motivation, and effective motivational strategies in varied learning contexts; and

3.11k techniques for structuring and pacing lessons in ways that promote student engagement and learning.

The beginning teacher is able to:

3.7s create lessons with a clearly defined structure around which activities are organized;

3.8s create activities and assignments that are appropriate for students and that actively engage them in the learning process;

3.9s select and use instructional materials, resources, and technologies that are suitable for instructional goals and that engage students cognitively;

3.10s represent content effectively and in ways that link with students' prior knowledge and experience;

3.11s use flexible grouping to promote productive student interactions and enhance learning;

3.12s pace lessons appropriately and flexibly in response to student needs;

3.13s engage students intellectually by teaching meaningful content in ways that promote all students' active and invested participation in the learning process; and

3.14s encourage students' self-motivation and active engagement in learning.

Providing Feedback to Students

The beginning teacher knows and understands:

3.12k characteristics of effective feedback for students;

3.13k the role of timely feedback in the learning process; and

3.14k how to use constructive feedback to guide each student's learning.

The beginning teacher is able to:

3.15s use appropriate language and formats to provide each student with timely feedback that is accurate, constructive, substantive, and specific;

3.16s promote students' ability to use feedback to guide and enhance their learning; and

3.17s base feedback on high expectations for student learning.

Demonstrating Flexibility and Responsiveness

The beginning teacher knows and understands:

3.15k the significance of teacher flexibility and responsiveness in the teaching/ learning process; and

3.16k situations in which teacher flexibility can enhance student learning.

The beginning teacher is able to:

3.18s respond flexibly to various situations, such as lack of student engagement in a learning activity or the occurrence of an unanticipated learning opportunity;

3.19s adjust instruction based on ongoing assessment of student understanding; and

3.20s use alternative instructional approaches to ensure that all students learn and succeed.

***Standard IV*. The teacher fulfills professional roles and responsibilities and adheres to legal and ethical requirements of the profession.**

Interacting and Communicating with Families

The beginning teacher knows and understands:

4.1k the importance of families' involvement in their children's education; and

4.2k appropriate ways for working and communicating effectively with families in varied contexts.

The beginning teacher is able to:

4.1s interact appropriately with families that have diverse characteristics, backgrounds, and needs;

4.2s apply procedures for conducting effective parent-teacher conferences;

4.3s communicate with families on a regular basis to share information about students' progress and respond appropriately to families' concerns; and

4.4s engage families in their children's education and in various aspects of the instructional program.

Interacting with Other Educators and Contributing to the School and District

The beginning teacher knows and understands:

4.3k types of interactions among professionals in a school (e.g., vertical teaming, horizontal teaming, team teaching, mentoring) and the significance of these interactions;

4.4k appropriate ways for working and communicating effectively with other professionals in varied educational contexts;

4.5k the roles and responsibilities of specialists and other professionals at the building and district levels (e.g., department chairperson, principal, board of trustees, curriculum coordinator, special education professional);

4.6k available educator support systems (e.g., mentors, service centers, state initiatives, universities);

4.7k the various ways in which teachers may contribute to their school and district; and

4.8k the value of participating in school activities.

The beginning teacher is able to:

4.5s maintain supportive and cooperative relationships with colleagues;

4.6s engage in collaborative decision making and problem solving with other educators to support students' learning and well-being;

4.7s work productively with supervisors and mentors to address issues and enhance professional skills and knowledge;
4.8s communicate effectively and appropriately with other educators in varied contexts;
4.9s collaborate professionally with other members of the school community to achieve school and district educational goals;
4.10s participate in decision making, problem solving, and sharing ideas and expertise; and
4.11s assume professional responsibilities and duties outside the classroom, as appropriate (e.g., serve on committees, volunteer to participate in events and projects).

Continuing Professional Development

The beginning teacher knows and understands:

4.9k the importance of participating in professional development activities to enhance content knowledge and pedagogical skill;
4.10k the importance of documenting self-assessments;
4.11k characteristics, goals, and procedures associated with teacher appraisal; and
4.12k the importance of using reflection and ongoing self-assessment to enhance teaching effectiveness.

The beginning teacher is able to:

4.12s participate in various types of professional development opportunities (e.g., conferences, workshops, work with mentors and other support systems);
4.13s enhance content and pedagogical knowledge through a variety of activities (e.g., reading journals, joining professional associations, attending conferences, engaging in coursework);
4.14s use evidence of self-assessment (e.g., portfolio) to identify strengths, challenges, and potential problems; improve teaching performance; and achieve instructional goals; and
4.15s use appropriate resources and support systems inside and outside the school to address professional development needs.

Required Assignment Alignment

Curriculum Standard	Test Framework - Domain & Competency	Performance Assessment for Mastery	Score (1-4)
PK-3 Content Standards: 19 TAC §235.13(e) Science. **PK-3 PPR Standards:** Standard 19 TAC §235.11(b) Instructional Planning and Delivery. (1-12)	**Early Childhood PK-3 Examination Framework:** Domain V Learning Across the Curriculum Competency 012 (Science and Technology) (A,B,C, D, F, G, H)	**Inquiry-Based Instruction, Unwrapping TEKS, and 5E Lesson Plan** Students will identify the basic structure of inquiry-based practices. They will explore the National Science Education Standards Overview followed by the Biological Sciences Curriculum Study (BSCS)	N/A

		5E Instructional Model. Students will then write an inquiry-based, standards aligned science lesson plan using the 5E instructional delivery.	