

MainSTREAM Science

Grades 3–4

SCIENCE

TECHNOLOGY

READING

ENGINEERING

ART

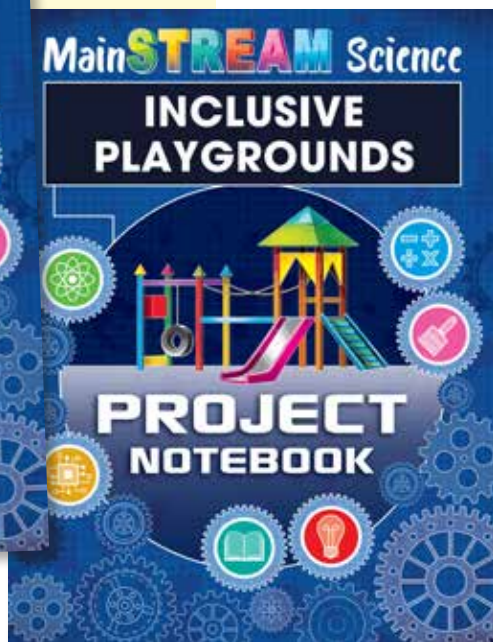
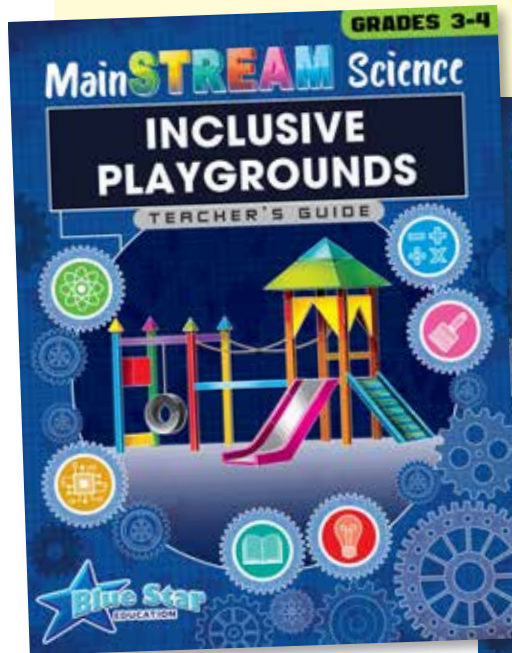
MATH



ADDRESSING INCLUSIVITY AND SOCIAL AWARENESS

ECO-FRIENDLY TRANSPORTATION

In this project promoting the importance of social awareness and inclusivity, students will use *Zip-Line Racers STEM Starters* as a stepping-stone to creating their own inclusive community playground.



THE CHALLENGE: Design and build a model of an inclusive playground for the community so children of all abilities can play, grow, and learn together.

WHAT DOES MainSTREAM Science REALLY OFFER?



FOR TEACHERS:

- guidance on how to serve as project-based learning coaches and facilitators
- step-by-step lessons that provide scaffolding for students
- suggestions for best practices regarding project-based learning
- an efficient way of connecting multiple disciplines and meeting content standards

A stress-free approach to bringing STREAM into the classroom by using a **project-based learning platform** that incorporates the **engineering design process** and establishes **clear criteria and constraints!**



FOR STUDENTS:

- the ability to apply STREAM-based practices to real-world solutions global issues
- the opportunity to grow intellectually and emotionally using a collaborative, problem-solving mindset
- exciting and engaging activities that enhance critical and creative-thinking skills

S-T-R-E-A-M IN ACTION



SCIENCE

MEET NEWTON & HIS LAWS

In 1643, a young boy named Isaac Newton was born in England. He was a very bright boy. There is a story about Newton. People say one day he was sitting under a tree. An apple fell from the tree. It had been right on the level of his head. This made Newton wonder why apples always fall straight down. They never float up. He thought about it for many days. He finally came up with his theory of gravity. He wrote it down in a book called *Philosophiæ Naturalis Principia Mathematica*. This is the most famous of his works.

Newton's theory of gravity explained how the force of gravity pulls objects toward the center of the Earth. He also explained how the force of gravity keeps planets in orbit around the Sun.

Newton's theory of gravity explained how the force of gravity keeps planets in orbit around the Sun.

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A CLOSER LOOK AT NEWTON & HIS LAWS

Directions: Perform a close reading of the story *Newton & His Laws*. Then, use the text to answer the questions below.

- The main idea of this text is _____.
- Write three facts about the main idea.
- What happens if an object is not moving? Why does it happen?
- Why does the author write about Isaac's ball and bowling balls to explain Newton's second law of motion?
- Explain Newton's first law of motion in your own words.

Write a brief summary of the text.

SUMMARIZE IT!

Write a definition for each boldfaced word in the text in the separate sheet of paper. Find a real-world example of Newton's laws of motion.

DIG A LITTLE DEEPER



TECHNOLOGY

TECH TIME

Directions: Look at the list below. Place a check mark next to the items you think you will learn more about or include in your team's presentation.

- geography
- technology
- embedded video
- graphs
- motion graphics
- animation
- sound effects
- graphic/animation

Directions: Answer the questions below independently. Then, discuss the answers with your team. Decide together how to best integrate technology into your presentation.

- What are some of the different materials your team used in your prototype? List them.
- What was the most difficult part in creating your prototype? Explain your answer.
- What do you think is the coolest part of your prototype? What part are you most proud of? Why?



READING

WHAT ARE INCLUSIVE PLAYGROUNDS?

Inclusive playgrounds are more than just a park. They are a place where everyone can play together. Inclusive playgrounds are designed to be fun for everyone. They have different kinds of equipment. They have different kinds of surfaces. They have different kinds of things to do. They are places where everyone can play together.

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A CLOSER LOOK AT INCLUSIVE PLAYGROUNDS

Directions: Perform a close reading of the story *What Are Inclusive Playgrounds?*. Then, use the text to answer the questions below.

- The main idea of this text is _____.
- Write three facts that support the main idea.
- Why are wider ramps a must at inclusive playgrounds?
- How is a ramp the author gives for including people with different abilities at an inclusive playground?
- Explain what an inclusive playground is in your own words.

Write a brief summary of the text.

SUMMARIZE IT!

Write a definition for each boldfaced word in the text. Find a real-world example of an inclusive playground.

DIG A LITTLE DEEPER



ENGINEERING

THE MISSION

Directions: Think with your team to read and discuss the information below. Remember to take notes as you read and during your team discussion.

Your mission is to design a playground for an inclusive playground for all children. You must include at least three pieces of equipment. You must include at least three pieces of equipment. You must include at least three pieces of equipment.

Criteria for Success

- The plan must be safe and fun.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.

Constraints

- The plan must be safe and fun.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.
- The plan must be fun for everyone.

THE PROTOTYPE

Directions: Answer the questions below independently. Then, discuss the answers with your team. Decide together how to best integrate technology into your presentation.

- What are some of the different materials your team used in your prototype? List them.
- What was the most difficult part in creating your prototype? Explain your answer.
- What do you think is the coolest part of your prototype? What part are you most proud of? Why?



ART

ARTISTIC RENDERINGS

Do you ever get ideas for something that you want to create? You might want to create an artistic rendering of your team's prototype and playground. There is a story about how to create an artistic rendering of your team's prototype and playground. There is a story about how to create an artistic rendering of your team's prototype and playground.

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MATH

LINE PLOTS & DATA

There are many different types of graphs. One type of graph is a line plot. A line plot is a way to show data. It is a way to show data. It is a way to show data.

A line plot is a good way to show data for a set of measurements, such as the height of playground equipment. Look at the line plot below.

Height of Slides in Feet

Height in Feet	Number of Slides
5	1
6	2
7	3
8	4
9	2
10	1
11	1

Just as with a bar graph, a line plot has several parts. It has a title, an x-axis, and a y-axis. The title is the height of the slides. The x-axis is the height in feet. The y-axis is the number of slides.

LET'S PRACTICE

Directions: Use the data on the chart to complete the line plot.


Zip Line Length (in feet)	Number of Zip Lines
1	3
2	2
3	2
4	1

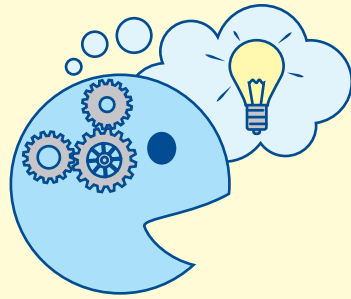
Directions: Use the line plot above to answer the questions.

- What is the difference in inches between the shortest and longest zip?
- How many zip lines were 2 feet?
- How many total inches did the zip lines have?
- If the longest zip line was 4 feet, how far did you go?

USING THE RIGHT TOOLS TO ENSURE SUCCESS

The Teacher's Guide

 A project-based learning method organized into 8 easy-to-follow steps!



1. Building a Team
2. Learning the Facts
3. Making Real-World Connections
4. Conducting Investigations
5. Building Prototypes
6. Preparing Presentations
7. Presenting to Peers
8. Reflecting

INCLUSIVE PLAYGROUNDS

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INCLUSIVE PLAYGROUNDS

IMPLEMENTATION (cont.)

TEACHER'S GUIDE (cont.)

UNIT 1	Getting Started	Students are introduced to the content and purpose of the project. They are then placed into their teams and will get to know their teams through various activities and exercises.
UNIT 2	Learning the Facts	Teams learn about the science behind the topic as well as the topic itself. They will research, read, and share their knowledge regarding Newton's laws. Teams will also conduct a brief science experiment to stir up excitement for the project.
UNIT 3	In the Real World	Teams will connect the challenge to the real world. Through real-life examples, they will see how and why playgrounds are designed to be inclusive for kids of all types of abilities.
UNIT 4	Practice Makes Perfect	Teams delve into the engineering aspects of the project as they work with their STEM Starters packs to create a zip-line device. They will learn the importance of trial and error, and they will come to see that there is often more than one way to solve a problem. They will make educated guesses and come to understand why taking risks can be a good thing.
UNIT 5	Here We Go!	Teams brainstorm and develop their proposed solutions to the problem. They will plan, test, retest, and problem-solve as they develop their zip-line prototypes and plan their playgrounds.
UNIT 6	Preparing for the Show	Teams will plan and create their presentations. This will include slide-show presentations, which may involve videos, diagrams, animations, etc. Encourage teams to be creative and employ the technology that is available to them.
UNIT 7	Showtime!	Teams will present their proposed solutions to the class, receive feedback, make modifications, and then present once more to a larger audience.
UNIT 8	Let's Reflect	The class will come together to debrief and discuss the project and its takeaways. Students will write a concluding journal entry in which they describe their personal growth during the project, the pros and cons of the project, and how what they have learned along the way will help them in the years to come.

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Teachers as Coaches—A Guided Plan for Every Unit

GETTING STARTED INCLUSIVE PLAYGROUNDS

UNIT 1: GETTING STARTED

THE PLAN

SUMMARY

In this unit, an entry event will kick off the project to help spark students' interest. Students will then learn the content and purpose of the project and be placed onto teams. Once in their teams, students will be given roles and learn the rules for this project. They will get to know their team members through various team-building activities and begin completing activity sheets together.

TEAM GOALS	CONTENT OBJECTIVES	MATERIALS
<ul style="list-style-type: none"> understand the objectives and steps of the project learn the team roles and rules get to know team members 	<ul style="list-style-type: none"> Students will engage effectively in a range of collaborative discussions with diverse partners, building on others' ideas and expressing their own ideas clearly. Students will speak in complete sentences when appropriate to the task and situation in order to provide requested detail or clarification. 	<ul style="list-style-type: none"> guest speaker or YouTube video (see Step 1, page 15) file box lid, 10–15 drinking straws, a marble, scissors, and tape (per group, see Step 8, page 16) small object, paper bag, sheet of paper, and pencil (per group, see Step 8, page 16) cardstock (one sheet per group, see Step 8, page 16) colorful markers

SUPPORTIVE SUGGESTIONS

When introducing and explaining the project, be enthusiastic. Speak with gusto! This project is a big undertaking. You want your students to feel eager and excited rather than overwhelmed and apprehensive.

Encourage questions, and be available to answer them. You may choose to set aside class time to answer group questions or make yourself accessible through email.

Monitor group interactions as much as possible to ensure everyone is participating and fulfilling their individual group roles.

DRIVING QUESTION

How can we design a playground that includes structures to be used by kids of all abilities?

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INCLUSIVE PLAYGROUNDS GETTING STARTED

THE PLAN (cont.)

STEP-BY-STEP

ENTRY EVENT

- Launch the inclusive playground project-based learning challenge by engaging students in the topic. A great way to do this is to have a guest speaker (an engineer, an architect, or a community leader who works with people with disabilities) come and speak with the class about his or her job. If no such speakers are available, consider showing a video that will inspire students and spark a lively class discussion. Consider searching for videos about Chris Downey on YouTube. He is a blind architect who helps design spaces to help support the blind and those with low vision. (Note: Be sure to watch all YouTube videos in their entirety to check for grade-level appropriateness prior to sharing them with the class.)

PROJECT NOTEBOOKS

- Distribute a Project Notebook to each student. Have students write their names on the first page. Explain that they need to keep careful track of their notebooks. The notebooks should be with them at all times in class (unless they are with the teacher to check work). Stress the importance of not losing them or damaging them because they will have all their notes, thoughts, and assignments pertaining to this project.

OVERVIEW

- Before explaining the project they are about to embark on, begin by giving students a couple of tips on how to take notes in a dot journal. The notes and journaling pages in the Project Notebooks are dot-journal style. Dot journals are easy to use, help with organization, boost creativity and productivity, and are fun to customize. Share some of the images and ideas from page 18 in this book with students to help get them excited about taking notes.
- Have students turn to pages 3 and 4 in their Project Notebooks. Tell them you will be going over the Project Overview (page 19) and you would like them all to take notes on the Getting Started Notes sheet (page 20). Explain to students that they will be placed in teams and will work with their team members over an extended period of time to design an inclusive playground in which students of all abilities can grow, play, and learn together. Explain that one feature of the playground will be a propulsion-powered zip line! While most zip-line devices are propelled by gravity, these zip lines will require a force, such as a propeller, to move them forward.
- Read the driving question out loud to students. Tell them that they will research, conduct experiments, engineer contraptions, design prototypes, and create tech-driven presentations. Share the diagram from page 7 with the class. At this time, go over each rubric in the appendix with students (pages 90–92). It is important that students understand what is expected of them throughout the course of the project. Refer back to these rubrics repeatedly.

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Step-by-step guidance for both teachers and students!

GETTING STARTED INCLUSIVE PLAYGROUNDS

THE PLAN (cont.)

STEP-BY-STEP (cont.)

GETTING IN GROUPS

- You have enough STEM Starters materials and Project Notebooks for six groups of five students. When placing students into groups, take into consideration students' social-awareness skills, personalities, work ethics, and leadership abilities. After students have been placed into their groups, go over the Team Roles & Rules sheet (page 21). Ask a volunteer to read the rules written on the gears. Ask a different volunteer to read the roles and descriptions. You can either assign students roles or let the teams decide among themselves. Once the roles have been decided, ask each team to come up with a team name and a team motto. Have each team write the following on a sheet of paper and turn it in: team name, team members' names and roles, and the team's motto.

GETTING TO KNOW ONE ANOTHER

- Have students fill out the Meet Me sheet (page 22). You may consider filling out one yourself to help students get to know you a little better and to serve as an example to students. Allow students time to complete the sheet either in class or at home. Next, have students take turns sharing the information from their sheets with their team members. Make sure they also share their contact information. Have them record notes and the contact information for their team members on the Meet My Team Notes sheet (page 23). Encourage teams to have a friendly discussion about likes, dislikes, and things they have in common with one another. At this time, ask the team diplomat to share their team's name and motto with the class. If time permits, also have the diplomat share a little bit about each team member.

TEAM BUILDING

- Have teams engage in one or more of the following team-building activities:

Build It!	Guess It!	Stack It!
Distribute a file box lid, 10–15 drinking straws, and a marble to each team. Have students use scissors and tape to position the straws to make a maze for the marble. Have teams exchange mazes with another group and work to get the marble through the maze.	Distribute an object in a paper bag to each group. For example, place a small toy in each bag. Have one team member reach into the bag without looking. He or she should use words to describe the object in the bag. Even if the student knows what the object is, he or she should only describe it to the group rather than tell what it is. One team member should record the words and phrases to describe the object. Team members should read the list of words and try to guess what the object is. The first team to guess their object wins.	Give each team a sheet of cardstock. Challenge them to create the best paper airplane they can. Have them decorate the airplane and give it a name. Then, go outside and have each team fly its airplane. The team whose airplane flies the fastest wins.

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INCLUSIVE PLAYGROUNDS GETTING STARTED

THE PLAN (cont.)

STEP-BY-STEP (cont.)

WORKING AS A TEAM

- Following the team-building activities, have students complete the Working Together and Solving It Together sheets (pages 24–25) independently. Then, have them share their sheets and discuss their answers with one another. If time permits, have each team's diplomat provide a quick summary of what their group discussed with the class.
- Have students complete the Pre-Project Questionnaire (page 26). This is a great opportunity to assess group dynamics and catch any early signs of problems with the group.

THINK, WRITE, DISCUSS

Have students complete the Think, Write, Discuss sheet (page 27). Have them think about all activities and assignments they completed in this unit.

How do they feel about embarking on this journey? How do they feel about working with a team? What do they like about this project? What do they hope to get out of it?

In the "Think" section, have students create a word cloud or generate a few doodles to help get their thoughts down on paper. In the "Write" section, have them put those thoughts into complete sentences. And for the "Discuss" section, have them discuss their thoughts and feelings with their team in one final team discussion for the unit. Encourage them to take notes in the final section of the sheet.

ODDS & ENDS

Timeline: Create a rough timeline for the project. Have a firm end date so you can schedule and prepare for the presentations. Would you like this project to be completed in a few months? A semester? A school year? Take into consideration how much class time can be devoted to the project. Will students need to work together outside class to complete it on time? Once you have a timeline, share important dates with students and parents.

Tech Tip: Consider creating a Google Calendar for the project. Share it with students and parents. Add important due dates, project goals, and reminders to the calendar. This will help keep everyone informed and on the same page.

Note: If your school does not already have Google Classroom, consider looking into it. It is free and is excellent for projects such as this.

"Classroom helps students and teachers organize assignments, boost collaboration, and foster better communication."

<https://edu.google.com/products/classroom/>

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Students as Collaborative Learners and Problem Solvers

Collaboration • Cooperation • Communication • Creative and Critical Thinking

Project-Based Learning at its BEST!

PROJECT OVERVIEW



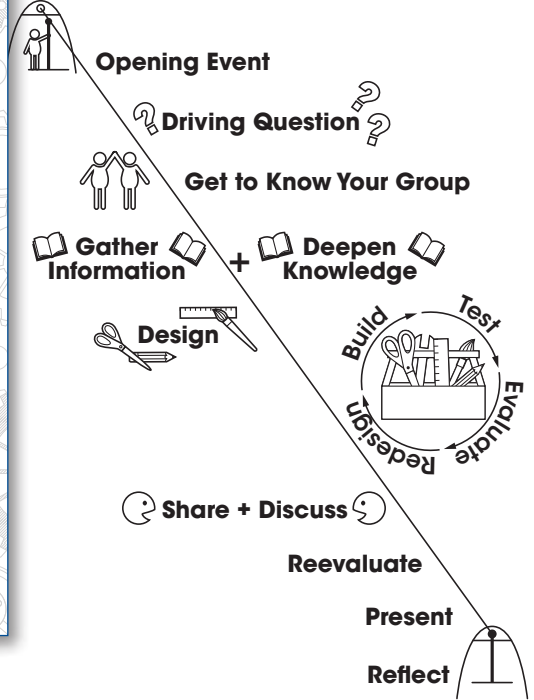
DRIVING QUESTION

How can we design a playground that includes structures to be used by kids of all abilities?

MISSION BREAKDOWN

<p>1 Meet Your Team</p> <p>Get to know your team and learn how to work together as a group.</p>	<p>2 Find the Facts</p> <p>Learn about Newton's laws of motion, and discover how playgrounds are designed to be inclusive. Conduct a mini-experiment involving Newton's first law of motion.</p>	<p>3 Make Real-World Connections</p> <p>Read about the current technology being used to create inclusive playgrounds, and set out on a research mission to find more real-world connections.</p>	<p>4 Zip-Line Racers</p> <p>Get supplies to design, build, and test a zip-line system. Keep building and rebuilding until your system is successful.</p>
<p>5 Apply Your Knowledge</p> <p>It's time for your team to apply all its research, knowledge, and skills into creating a model of an inclusive playground.</p>	<p>6 Polish Your Prototype</p> <p>Put your team's creativity and technology skills to the test as you work together to create a show-stopping presentation to present your model to the world.</p>	<p>7 Present Your Ideas</p> <p>Teams will take turns presenting their ideas and models.</p>	<p>8 Pause for Reflection</p> <p>Reflect on what you have learned and how you have grown throughout the course of this project.</p>

PBL



SUCCESS through TEAMWORK!

Team-building activities support Social-Emotional Learning throughout the program!

TEAM ROLES & RULES

ROLES

Moderator

The moderator keeps the group focused and on task by leading and directing discussions and activities.

Diplomat

The diplomat serves as spokesperson to the class and as liaison between other groups and the teacher.

Time Manager

The time manager keeps track of time consumed for activities and discussions, and is also in charge of managing the team's deadlines.

RULES

Be positive and polite.

Be inclusive.

Participate.

Show respect.

Stay on task.

Recorder

The recorder takes notes, records data, and keeps track of any loose paperwork.

Wild Card

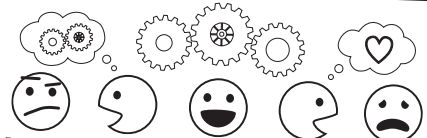
The wild card fills the role of any team member out for the day or any team member that needs additional support. The wild card also serves as the team's motivator by encouraging team members to do their best.

SOLVING IT TOGETHER

Directions: Rewrite the driving question in your own words in the box below. Then, think about the upcoming project and answer the questions below.

THE PROBLEM

- If your team gets stuck, whom can you turn to for help?
- What topics do you need to learn more about to solve this problem?
- How can you work together as a team to best solve this problem?



Resources for Writing, Assessments, and Standards

Reflective, research, and observational writing opportunities are provided for all levels.

PRE-PROJECT QUESTIONNAIRE

Directions: Answer the questions below to the best of your ability. There are no wrong answers.

- How do you feel about this project? Why?

- How do you feel about working with your team on this project? Why?

- What part of the project are you most excited about? Why?

- What part of the project are you least excited about? Why?

- What do you hope to get out of this project? Be specific.

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MEET ME

These are a few of my favorite things...

food: _____

hobby: _____

movie/TV show: _____

book/song: _____

Fast Facts

I was born in _____

on _____

Things I Like About Myself

1) _____

2) _____

3) _____

Things That Stress Me Out

1) _____

2) _____

3) _____

I have always wanted to...

When I grow up...

I am happiest when...

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FIRST JOURNAL ENTRY

Dotted lines for writing.

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LET'S ASSESS #1

Directions: Think about all that you have learned and accomplished since starting this project. Use that knowledge and those experiences to complete the 3-2-1 countdown below. Write your answers in complete sentences.

- Write 3 things you did not know about laws of motion before this unit.

- Write 2 things that surprised you about inclusive playgrounds.

- Write 1 thing you want to start doing with what you have learned about inclusive play.

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TEST MAKER: _____
TEST TAKER: _____

LET'S ASSESS #2

Directions: Think about all that you have learned since starting this project. Use what you have learned to create a quiz for one of your team members to take. Your quiz should have four multiple-choice questions and one short-answer question. After you create your quiz, create an answer key on a separate sheet of paper.

Directions: Choose the best answer for each question.

- _____

a. _____ b. _____ c. _____ d. _____

- _____

a. _____ b. _____ c. _____ d. _____

- _____

a. _____ b. _____ c. _____ d. _____

- _____

a. _____ b. _____ c. _____ d. _____

Directions: Answer the question in complete sentences.

- _____

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On-going formative assessments allow both teachers and students to check progress.

LET'S ASSESS #3

Directions: Think about all that you have learned and accomplished since starting this project. Use that knowledge and those experiences to write three summaries below. Write your answers in complete sentences.

- Write approximately 15 words summarizing what you have learned about working on a team.

- Write approximately 30 words summarizing what you have learned about creating a good presentation.

- Write approximately 60 words summarizing what you have learned about the need for inclusive playgrounds.

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Rubrics—Defining Expectations

APPENDIX INCLUSIVE PLAYGROUNDS

COLLABORATION RUBRIC

	3 (exceeds standard)	2 (at standard)	1 (approaching standard)	0 (below standard)
Takes Responsibility for Self	<ul style="list-style-type: none"> does more than is asked to do consistently stays focused and completes tasks 	<ul style="list-style-type: none"> does what is required often stays focused and completes tasks 	<ul style="list-style-type: none"> does some of what is required stays somewhat focused and completes most of the tasks when reminded 	<ul style="list-style-type: none"> rarely does what is required does not stay focused and does not complete tasks
Participates and Contributes	<ul style="list-style-type: none"> encourages team members to share ideas is a leader on the team and helps manage conflicts that arise 	<ul style="list-style-type: none"> willingly shares ideas with team members actively helps the team solve problems 	<ul style="list-style-type: none"> sometimes shares ideas helps the team when asked to do so 	<ul style="list-style-type: none"> does not share ideas rarely helps the team
Works Well with Others	<ul style="list-style-type: none"> encourages team members to be respectful reminds team members to listen is consistently kind and sympathetic 	<ul style="list-style-type: none"> is respectful of team members' ideas and feelings mostly listens to team members is sometimes kind and sympathetic 	<ul style="list-style-type: none"> is respectful most of the time is sometimes kind and sympathetic 	<ul style="list-style-type: none"> shows little respect for team members rarely listens and repeatedly asserts hurts others' feelings

INCLUSIVE PLAYGROUNDS APPENDIX

CRITICAL & CREATIVE THINKING RUBRIC

	3 (exceeds standard)	2 (at standard)	1 (approaching standard)	0 (below standard)
Inquire & Evaluate	<ul style="list-style-type: none"> consistently seeks out new information to help solve the problem is successful at analyzing and evaluating arguments and evidence 	<ul style="list-style-type: none"> often seeks out new information to help solve the problem is effective in analyzing and evaluating arguments and evidence 	<ul style="list-style-type: none"> sometimes seeks out new information to help solve the problem is not comprehensive when analyzing and evaluating arguments and evidence 	<ul style="list-style-type: none"> rarely seeks out new information to help solve the problem does not analyze or evaluate arguments or evidence
Logic & Reasoning	<ul style="list-style-type: none"> consistently uses sound logic employs various types of reasoning that are appropriate for the given situation 	<ul style="list-style-type: none"> often uses sound logic uses reasoning skills that are suitable for the given situation 	<ul style="list-style-type: none"> sometimes uses sound logic uses reasoning skills that may or may not be fitting for the given situation 	<ul style="list-style-type: none"> rarely uses logic attempts to use some reasoning skills
Curiosity & Risk Taking	<ul style="list-style-type: none"> actively seeks out new and untested ways of solving a problem is not constrained or fearful of the risk of failure 	<ul style="list-style-type: none"> willingly considers new and untested ways of solving a problem is somewhat apprehensive and slightly fearful of the risk of failure 	<ul style="list-style-type: none"> hesitantly considers new and untested ways of solving a problem is apprehensive and fearful of the risk of failure 	<ul style="list-style-type: none"> unwilling to try new and untested ways of solving a problem prefers an option with little to no risk of failure

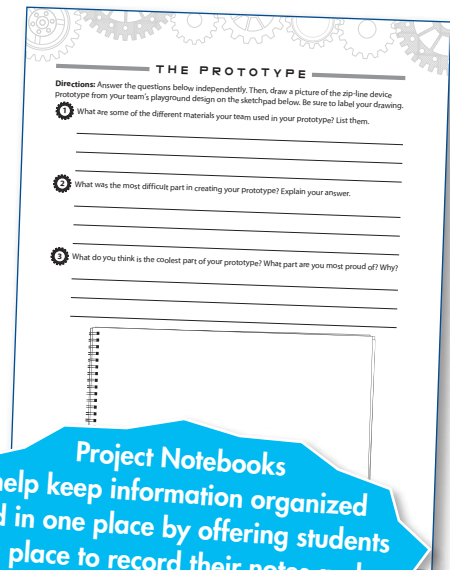
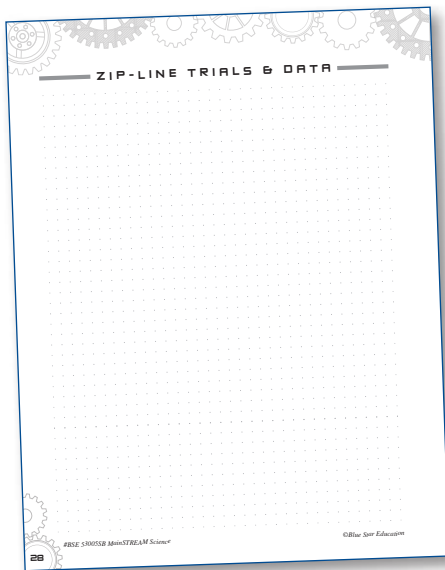
APPENDIX INCLUSIVE PLAYGROUNDS

GROUP PRESENTATION RUBRIC

	3 (exceeds standard)	2 (at standard)	1 (approaching standard)	0 (below standard)
Preparedness	<ul style="list-style-type: none"> extremely well prepared, showing signs of multiple rehearsals presentation stays within the time constraints 	<ul style="list-style-type: none"> well prepared, shows signs of rehearsal presentation is very close to meeting the time constraints 	<ul style="list-style-type: none"> somewhat prepared, but could have used more rehearsal time presentation is slightly outside of the time constraints 	<ul style="list-style-type: none"> not prepared, showing obvious signs of little rehearsal presentation is noticeably too short or clearly exceeds time constraints
Content	<ul style="list-style-type: none"> skillfully addresses all components proficiently explains the story, engineering, and science behind the prototype 	<ul style="list-style-type: none"> includes all components explains the story, engineering, and science behind the prototype 	<ul style="list-style-type: none"> includes almost all components attempts to explain the story, engineering, and science behind the prototype 	<ul style="list-style-type: none"> includes none of the required components does not attempt to explain the story, engineering, and science behind the prototype
Performance	<ul style="list-style-type: none"> members speak very clearly and confidently members are enthusiastic and at ease with being in front of a crowd members consistently maintain eye contact and hold the audience's attention 	<ul style="list-style-type: none"> members speak clearly and confidently for most of the presentation members are mostly cheerful and relaxed members establish eye contact often and hold the audience's attention most of the time 	<ul style="list-style-type: none"> members speak somewhat clearly and confidently members show signs of uneasiness members attempt to make eye contact with the audience 	<ul style="list-style-type: none"> members do not speak clearly members appear restless and distracted members do not attempt to make eye contact with the audience

Three types of rubrics provide teachers and students with specific expectations.

Project Notebooks



Project Notebooks help keep information organized and in one place by offering students a place to record their notes and thoughts throughout the learning process.

STEM Starters



With *STEM Starters*, students are given essential pieces of a much larger puzzle. They decide on additional materials to include in their build—a build that is limited only by their imaginations! Instructions are purposely left out of the building activity to create an entirely new and rewarding experience in which students learn the value of failure and risk-taking. Students will learn that there is often more than one way to solve a problem.