Exploring Data Analysis and Graphing

Build a Business Plan

Math Project-Based Learning Grades 6-8

Gather, Interpret, and Present Data

Think Like a Growth Hacker

Build a Sports Team Business Plan

Lesson Plan:
Exploring Data Analysis and Graphing

ABOUT THIS PROJECT-BASED LESSON

This project-based learning unit is designed to teach and reinforce the concepts in a middle school mathematics unit on graphing and can be used in conjunction with existing curriculum materials.

The project is divided into 5 Milestones; each Milestone includes a self-contained student project activity. Done in sequence, the Milestones connect to enable students to produce a comprehensive capstone activity.

The minimum suggested duration for completing this project is 5 class periods. However, it is completely flexible and can be lengthened or shortened as necessary, based on available class time and interest level.

HOW TO USE THIS TEACHING GUIDE

Each Milestone for this project-based learning unit includes detailed daily activities presented in step-by-step order, with teaching notes, instructional guidance, and page references to resources and materials included in the Teacher Pack and Student Pack.

Daily activities are organized for you as follows:

- **Prepare (Bell-ringer/opener activity)**

  Use these short opening activities at the beginning of class.

- **Present (Lecture/model)**

  Use this portion of the lesson to deliver new subject material and project information, and to model any instructions or activity required for Produce or Participate elements.

- **Produce (Student project work)**

  Use this portion of the lesson to allow students to work independently or in small groups on activities and other project elements.

- **Participate (Student/group share)**

  Use this portion of the lesson to allow students to share out any project, research, or presentation materials.

- **Practice (Homework/assessment/independent)**

  Use this optional portion of the lesson, if desired, to give students homework activities.

Step-By-Step Project
Teaching Guide

MILESTONE #1

BUILDING BACKGROUND KNOWLEDGE ABOUT BUSINESS AND GROWTH HACKING
Overview, Objectives, Inquiry Questions, and Planning

THINGS TO CONSIDER FOR MILESTONE #1

- Cross-curricular resources, like books about business and data, may be helpful in making prior knowledge concrete. You can find a list of suggested books on page 4 of the Teaching Guide.

- You might want to limit the number of students who choose the same sports team for the project. You could allow only one or two students to choose each team so you're able to look at a variety of data.

LEARNING OBJECTIVES FOR MILESTONE #1

At the conclusion of this milestone, students will be able to:

- Explain what growth hacking is and how businesses use it.

- Gather information about their favorite sports team.

- Brainstorm ways to increase ticket sales for their favorite team.

- Explain the first steps they would take as a growth hacker for a business.

EXTENSIONS AND ENHANCEMENTS FOR MILESTONE #1

- Are there local institutions (i.e. businesses) who could serve as partners in this lesson?

- Are there other resources or extensions that you can link this project to in order to enhance prior knowledge or introduce new knowledge? For example, have your students read the article "Growth Hacking" to learn more about it. Have them use the information to complete the "3-2-1 Summary" printable on page 3 of the Student Pack.

STUDENT INQUIRY QUESTIONS FOR MILESTONE #1

- What is growth hacking, and how do businesses use it?

- How has the value of your favorite sports team changed over the last 5 years?

- How can you increase ticket sales for your favorite team?

- You were just hired as a Growth Hacker for a big company. What are the first steps you would take to help the company earn more money?

ASSESSMENT FOR MILESTONE #1

- **Formative Assessment for Individual Activity**: Check each student's "Choose Your Favorite Team" printable on page 6 of the Student Pack.

- **Formative Assessment for Group Activity:** Have each group share one of their ideas to increase attendance at their teams' games.

- **Summative Assessment:** Have the students complete the response printable on page 7 of the Student Pack for the Inquiry Question, "You were just hired as a Growth Hacker for a big company. What are the first steps you would take to help the company earn more money?"

Student Pack
- Page 4
- Page 5
- Page 6
- Page 7

Teacher Pack
- Page 5

Project Activities for Milestone #1: Building Background Knowledge About Business and Growth Hacking

PREPARE (Bell-ringer/opener activity)

Have the students turn and talk about entertaining halftime shows or other promotional activities (t-shirt cannon, bouncy houses, bobblehead nights, free giveaways, etc.) they've seen at sporting events. Call on students to share their answers.

PRESENT (Lecture/model)

Explain to the students that they will be working on a plan to increase ticket sales for their favorite sports team. They will learn some basic marketing and customer engagement techniques, which are known as "growth hacking."

Give the students the "Growth Hacking" printable on page 4 of the Student Pack. Show them the video "What is Growth Hacking?" and have them answer the questions. Use the "Growth Hacking Answer Key" on page 5 of the Teaching Guide to discuss the answers.

Tell the students that today they will be choosing a sports team to research. Give the students the "How to Do Good Research" printable on page 5 of the Student Pack. Go over the steps they will take to research their sports team.

PARTICIPATE (student/group share, group activity)

Give the students the "Choose Your Favorite Team" printable on page 6 of the Student Pack. Have each student choose a professional sports team to research. Allow them to use the internet to find the answers to the questions at the top of the page.

As the students complete the questions, put them in groups of 3 or 4 to brainstorm fun ideas to increase attendance at their teams' games. They should record their ideas in the "Promotional Ideas Brainstorm" section at the bottom of the printable.

Formative Assessment: Have each group share one of their ideas to increase attendance at their teams' games.

PRACTICE (Homework/independent work/extensions)

Give each student the writing response template on page 7 of the Student Pack and ask them to write an answer to the inquiry question for this Milestone: "You were just hired as a Growth Hacker for a big company. What are the first steps you would take to help the company earn more money?"

ASSESSMENT

Formative Assessment for Individual Activity: Check each student's "Choose Your Favorite Team" printable on page 6 of the Student Pack.

Formative Assessment for Group Activity: Have each group share one of their ideas to increase attendance at their teams' games.

Summative Assessment: Have the students complete the response printable on page 7 of the Student Pack for the Inquiry Question, "You were just hired as a Growth Hacker for a big company. What are the first steps you would take to help the company earn more money?"