Sherlock Gnomes

Engineering and Animation, 3rd Grade

Teacher Guide

Objective

Students will be able to analyze the 5-step animation process to generate systems and tools to improve its efficiency.

Introduction

When creating an animated sequence, movie studios use a 5-step process that transforms an idea into a fully-realized animation. The Production Team consists of a group of artists working through each of the 5 steps: Storyboarding, Blocking, Animation, Pre-Lighting, and Final Lighting. This process can go on for 2-3 years when artists are working on a feature film. While each step happens sequentially, there may be times when the artists have to re-work scenes or develop new ones, which requires a return to the beginning steps of the process. Often, the Marketing Team will work with the Production Team to identify the first complete scene that can be used in a process called "Market Research," where the Marketing Team shows the scene to many people to determine the interest in the movie. Based on their feedback, the Marketing Team will work with the Production Team to revise parts of the movie.

Activity

This activity will lead students to exercise higher-order thinking skills by leading them through a series of scaffolded activities.

Remember: Distribute Worksheet 3-A and play "Animating Sherlock Gnomes" video for students, pausing where necessary. As each step is introduced, have students write in the name for each.

> *Formative Assessment*: Ask students to hold up fingers in response to questions you ask about the 5-step process. "How many steps are in the animation process?" "During what step do the artists start to add light?"

Understand: Direct students' attention to the middle section of the worksheet that details the days required for each step in the process.

Apply: Ask students the following questions and have them discuss their answers with peers. "What are the artists doing during the 8 days of blocking?" "Storyboarding takes the longest time. What about this step needs extra time?"

> *Math Connection*: Have students circle the step that they think costs too much money and put a box around the step they think takes too much time. Have them solve the math problems below.
> CCSS.MATH.CONTENT.3.OA.A.3

Analyze/Create: Share with students that the Production Team who created *Sherlock Gnomes* had to think really hard about the animation process and who would work on each step. When people create and organize steps in a process, they are engaging in **engineering**. Tell students that they will now start learning how to "think like an engineer" by creating their own animation process.

Based on their understanding of each step of the process and each step's duration, have the students schedule each step by marking the start and end dates in the numbered boxes. Have students explain their choices in writing.

Summative Assessment: Evaluate student schedules and written explanations. Determine if they exceed, meet, or approach standards. Implement the suggestions to group students and expand the lesson, if you wish.

Exceeds Standards:	Schedule ensures that all 5 steps to occur within the time constraints while making specific choices based on the function of each step. *Have students create a plan for transitions between each step and include them in the schedule.*
Meets Standards:	Schedule ensures that all 5 steps to occur within the time constraints but does not consider the function of each step. *Have students trade their schedule with a friend. Have students create 3 specific changes to their friend's schedule that would make it more effective.*
Approaching Standards:	Schedule does not ensure that all 5 steps occur within the time constraints. *Have students consider their morning routine. Instruct them to develop a schedule that would complete all their tasks within 15 minutes.*

Duration

1 hour

Standards

Next Generation Science Standards
3-5 ETS1-1

National Core Arts Standards
MA:Cr.2.1.3

Differentiation

Advanced students can be asked to consider not only time constraints, but space constraints in their plans. Eg: "*If the whole Production Team works out of one office, how will there be enough space to have 3 steps happening at the same time?"*

Beginning students can be asked probing questions to assist their thought processes. Eg: "*How many days are required for all the steps?*" "*How many days have you been given to complete all the steps?" "If you have to do your homework and watch your little brother after school, how do you have time to do both?*" "*Can you create a schedule with multiple steps happening at the same time?*"

Beginning students can be given extra days in their schedule to reduce the number of steps that have to occur simultaneously.

Vocabulary

Tier 2	Tier 3
Animate	Production Team
Process	Marketing Team
	Market Research

Sherlock Gnomes

Name _____

Engineering and Animation, Worksheet 3-A

Write the five steps of the animation process.

step 1 _____

step 2 _____

step 3 _____

step 4 _____

step 5 _____

Circle the step that you think costs too much money. Put a box the step that you think takes too much time.

step 1	$12	8 days
step 2	$18	6 days
step 3	$24	6 days
step 4	$12	2 days
step 5	$6	2 days

There are five people who work on step 2. How many days do the 5 people work all together?

_____ days

The work from step 1 was lost and had to be done again. How much money did it cost to do it twice?

_____

The head of production has asked how much each day of step 3 costs. What do you tell her?

_____

Sherlock Gnomes

Name _____

Engineering and Animation, Worksheet 3-B

The marketing team needs the movie to be finished in 20 days. Create a calendar that shows how you can get all of the work done. Assign each step a different color. Mark which days each team will start their work with an "S." Mark which days they will finish their work with an "F."

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Explain your choices. _____

_____

_____

_____