Anno's Magic Seeds
Example Lesson Grade 4

Ages 8+
Mathematics – Exponential Growth & Powers, Multiplication
Stem (Coding)
Social Studies – Early Societies (Relationship to food consumption today vs. early societies, differences similarities, compare life to Anno's Seeds)
Science – Habitats and Communities – plant/food cycles
Language Arts

"A gift from a wizard makes Jack's fortune grow by ones and twos, then threes and fours, then fast and faster, challenging you to keep track of his riches." Find out what happens when Jack eats or plants his magic seeds.

Learning Objectives
-To be able to identify, continue, and create a growing pattern
-To be able to predict the number of seeds Anno will grow after each harvest using exponential growth/multiplication strategies

Curriculum Expectations: Patterning and Algebra

- Extend, describe, and create repeating growing, and shrinking number patterns
- Create a number pattern involving [multiplication] given a pattern rule
- Make predications related to repeating patterns. (Ex. Predict how many seeds Jack will have after 10 years)

Guiding Ideas - Introductory Activity:
Watch Anno's Magic Seeds stop-motion video. Read Anno's Seeds Story. Discuss what students noticed throughout the video/story, can students orally explain what has happened throughout the story. How did the number of seeds Jack has grow so large?

Student Activities – Mathematics
-Have students chart and graph the # of years Jack plants seeds to show them the growth that occurs when Jack plants both seeds.

-As an accelerated task, ask students what would happen in year 10 if Jack had planted 2 seeds in year 1.

-Have students play the coding game, can students describe what happens when he chooses not to eat a seed? Chart each year and number of seeds grown based on gameplay (student choices to plant or eat seeds).

Extensions: Cross Curricular

- Have students write (or code) their own magic seeds book, starting by planting 2 seeds following the same guidelines as the story (for each seed planted, 1 more will grow each year)
    - How does this differ from the story when he begins with 1 seed? Can students predict what will happen? Will the number of seeds Jack has grow faster or slower?
    - Media literacy – students create their own storyboard for their version of Anno's Magic Seeds
- Science: what would happen if Jack's harvest failed to grow due to extreme weather in year 5? Use understanding of habitat/life cycle to explain.
- Social Studies: Compare Jack's lifestyle (planting for food) to current life and early societies, which is more similar? Why? Consider both rural and Urban areas

Performance Expectations

- Students should be actively participating in all activities
- Students will be able to predict what they think will happen in year 10, or in their own versions of the story
- Can the students chart the number of years and number of seeds grown correctly

Skills

-Problem solving: develop, select, and apply problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;

-Reasoning and proving: develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to make and investigate conjectures and construct and defend arguments

-Representing: create a variety of representations of mathematical ideas (e.g., by using physical models, pictures, numbers, variables, diagrams, graphs, onscreen dynamic representations), make connections among them, and apply them to solve problems;

-Communicating: communicate mathematical thinking orally, visually, and in writing, using everyday language, a basic mathematical vocabulary, and a variety of representations, and observing basic mathematical conventions.