Kindergarten STEAM Unit 2 - STEAM Fairytales: Building Solutions for Storybook Friends

Unit Focus

This unit will integrate Science, Technology, Engineering, the Arts and Mathematics to guide student inquiry, dialogue, and critical thinking within the context of fairy tales.

In this unit, kindergarten students step into the world of classic fairy tales—but with a twist! Instead of just listening to the stories, students become engineers, designers, and inventors who help the characters solve their biggest problems. Can they build a drawbridge for a castle, design a carriage for Cinderella, or create a zipline for Jack to escape the beanstalk?

Through hands-on challenges, students will:

- Read and explore fairy tales with familiar characters.
- Design and test solutions using STEAM practices.
- Work like engineers—planning, building, testing, and improving their ideas.
- Collaborate and problem-solve to bring their storybook friends to safety.

By the end, students won't just know fairy tales—they'll have engineered new endings!

Stage 1: Desired Results - Key Understandings

Standard(s)

Common Core
Mathematics: K

- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (CCSS.MATH.CONTENT.K.CC.C.6)
- Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1)
- Model with mathematics. (CCSS.MATH.MP.4)

Next Generation Science Standards
Performance Expectations: K

- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)

Transfer

Students will be able to independently use their learning to...
T1 Ask questions to gain understanding, communicate their ideas, explain their thinking process, and evaluate efficiency or connectedness to a concept.
T2 Work collaboratively and contribute constructively to project teams with a broader or global perspective.
T3 Use the engineering design process to invent or innovate solutions.
T4 Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

Meaning

Understanding(s)

Students will understand that...
U1 Effective communicators ask questions, reread for information, or think about how this problem is similar to something else I have done.
U2 Collaborative problem-solvers share ideas and respect the ideas of others.
U3 Engineers utilize the engineering design process to solve problems and develop new ideas.

Essential Question(s)

Students will keep considering...
Q1 How can I better understand a problem or task?
Q2 How do effective group members contribute to a group? How might a group work towards a common goal?
Q3 Based on what I know, how do I develop a design that I can test?

Stage 1: Desired Results - Key Understandings

National Core Arts Standards
Visual Arts: K

- Engage collaboratively in creative artmaking in response to an artistic problem. (VA:Cr1.2.K.a)
- Create art that represents natural and constructed environments. (VA:Cr2.3.K.a)

Next Generation Science Standards (DCI)
Science: K

- Before beginning to design a solution, it is important to clearly understand the problem. (ETS1.0.A3)
- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (ETS1.0.B1)
- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (ETS1.0.C1)

Madison Public Schools Profile of a Graduate

- Design: Engaging in a process to refine a product for an intended audience and purpose. (POG.2.2)
- Collective Intelligence: Working respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. (POG.3.1)

U4 Effective problem-solvers break apart challenges into small, manageable tasks, evaluating their process along the way.

Q4 How do I get started when a task seems too big?

Acquisition of Knowledge and Skill

Knowledge

Students will know...
K1 Before beginning to design a solution, it is important to clearly understand the problem.
K2 Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
K3 Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
K4 Solving complex problems can require more than one attempt and/or design.

Skill(s)

Students will be skilled at...
S1 Retelling a story and identifying the problem.
S2 Asking questions, making observations, and gathering information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
S3 Developing a simple sketch, drawing, or physical model to illustrate how the shape of an object helps its function.
S4 Using the engineering design process to invent or innovate solutions.
S5 Considering the benefits of certain materials and use this to make design decisions
S6 Contributing to collaborative conversations effectively.