Lesson 1 (Hikaru’s Toy Troubles Storybook)

**ELA**
- Write in response to text:
  - How can you make something better, why?
  - Cause and effect
  - Inferences and Predictions
  - Problems and solutions
- Vocabulary
  - Beck’s
  - Word Wall
  - Spelling
- Reader’s Workshop: non-fiction genre, realistic fiction
- More books on transportation engineering
- Integrate GHGR (Good Habits, Great Readers) non-fiction unit
- Work in small groups to read chapters, write a chapter summary as a group. Students copy into their science journals and add a sketch.
- Text to self, text to world connections
- Have students act out the story after reading
- Preview the language that will be used in the whole unit with ELLs
- Teach comprehension skills in reading (i.e. sequencing, asking questions, predicting, visualizing)
- Teach and expand vocabulary skills using context clues and dictionary skills
- The engineering design process (EDP) is similar to the writing process.
- Tell story with pictures instead of reading
- Do a research project on different types of transportation

**Social Studies**
- Use Japan as a focus—world geography, language, literature, art
  - Sadako story (Sadako and the Thousand Paper Cranes)
  - Japanese culture
  - origami
- Tie-in with jobs and light rail in Minneapolis
- Compare and contrast two countries/cultures
- Current events—connect to images and news of Japan, transportation systems (read and compare), maps
- Language lessons
- Map reading
- Cultural awareness

**Miscellaneous**
- Look at different transportation engineers working today
- Use as an introduction to the Young Inventors Fair
- Morning meeting greeting

Lesson 2 (Steering Clear of Danger)

**ELA**
- Students can identify a dangerous intersection in the neighborhood and write a letter to city officials with suggestions to improve safety
- Vocabulary work
- Carefully go outside of school building, observe and write about traffic
- Homework—describe how “traffic” moves in or near your home
Discuss/write about bike and pedestrian safety
Practice writing with sequencing words as they explain how they used the design process to make the intersection safer and more efficient
2nd step curriculum – practice good discussion behavior

Math
- intersection-related geometry
  - parallel and perpendicular lines
  - intersecting lines
  - 90-degree angles
- Make/measure the roads
- Have students tally how many signs they went through from their homes to school or vice-versa. Use data to make graphs (line, bar, point)
- Record the amount of time turns take or how long you have to wait at lights or stop signs

Social Studies
- Use Google Maps to view intersections
- Vocabulary of directions (N,S,E,W)

Miscellaneous
- Bus safety, hallway behavior, pedestrian safety, bike safety
- Reinforce teamwork and cooperation skills
- Tie into Current Events: route of Holidazzle, Winter Carnival Parade
- Data collection
- Reinforce following directions, rules, and walking in the school

Lesson 3 (A Magnetic Personality)

ELA
- Write about which station you liked best and why?
- Write predictions
- Read How-To books
- Practice procedural writing
- Verbal discourse circle
- Writing: design a magnetic “magic” trick, making an everyday object move “magically” and fooling your friends
- Teach the lessons to younger students, or write about how you would do so
- Write complete descriptions, details, and main ideas.

Math
- Measurement
  - Inches to centimeter conversions
  - Measuring to the nearest ¼ centimeter
- Volume and capacity with sailboat basin

Science
- Iron filing activity (FOSS) to visualize magnetic field
- Uses for magnets in the real world
- Draw results

Miscellaneous
- Working together with a partner

Lesson 4 (Designing a Maglev System)

ELA
- Read books about real Maglev systems/magnetism and journal about them
- Reflection/writing could be done as part of writing block
- Write a how-to booklet “How to build a maglev system”
Present as an oral presentation for finished product
- Write the steps of the process
  - Using key words (use “first,” “next,” etc)
  - Write beginning, middle, and end

**Math**
- Figure out the “amount” of the repel/attract forces
- Reinforce spatial references and measurements
- If students need lots of one kind of magnet, make it a math problem to figure out how many will fit without laying them out and counting

**Social Studies**
- Study the real Maglev train in Japan, including its route, show photos
- Compare different types of transportation systems to the Maglev system
- Environmental advantages/disadvantages of using Maglevs
- Connect with history of transportation in different regions/states of the United States

**Art**
- 3D drawings of their maglev trains

**Miscellaneous**
- Discuss “Green” energy
- Cooperative Learning
- Following a procedure
- Integrate with the concept that perseverance contributes to success more than inborn intelligence