### Planning the inquiry

1. **What is our purpose?**
   
   To inquire into the following:
   
   - *transdisciplinary theme: Where we are in Place and Time: Machines*
   
   - *central idea: how machines have changed over time and make life easier for humans*

   **Summative assessment task(s):**
   
   What are the possible ways of assessing students’ understanding of the central idea? What evidence, including student-initiated actions, will we look for?

   Students will be able to demonstrate their understanding of simple machines, their evolution and their efficacy to make humankind lives more productive through presentation of posters, play project boards and demonstration of simple machines at work.

   **Content:** Presentation with a checklist for identifying the timeline of the object’s evolution with a rubric identifying the lines of inquiry.
   
   **Process:** presentation, visual or verbal through a project board displayed at inquiry fairy
   
   **Product:** students will create a presentation bard through analyzing a machine’s evolution of their choice

2. **What do we want to learn?**

   What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?

   1. **What do simple machines do to help make machines operate?** (Function: How does it work?)
   
      a) Students understand how large machines are able to work and run due to the simple machines that are inside to make up the large machine.
   
   2. **Why are different machines used in different parts of the world?** (Form: What is it like?)
   
      b) Different parts of the world create different environments for transporting export and import goods. These environments form reasoning to utilize different machines.
   
   3. **How has time made machines and industries change throughout time?** (Connection: How is it connected to other things?)
   
      c) As time changes, new needs are established which connects the reasoning why we see items change and improve over time.

   **What lines of inquiry will define the scope of the inquiry into the central idea?**

   What are simple machines? How are they used in modern machines and technology?

   How have machines evolved through time?

   How are different machines utilized in different parts of the world?

   How have machines changed the product industry over time?
2. What do we want to learn? Continued..

What teacher questions/provocations will drive these inquiries?
Accepting Responsibility- how would your life change taking away a machine you use daily?

Respecting Others- We accept people for what they have. Some people may not have the same resources we do? However, they treat everyone kindly. (Understanding)

Cooperation – How machines brought modern day conveniences?

Resolving Conflict – How have machines changed major events and conflict in History?

Group Decision Making – How can we work together to create a machine that solves a problem? Small groups of students coming together to design a machine that solves a problem.
5. What resources need to be gathered?

What people, places, audio-visual materials, related literature, music, art, computer software, etc., will be available?

We will go to the C & A Factory, a place that makes robots. The students will create their own machines with movable parts. We will use Youtube videos for Rube Goldberg Machines as well as looking at videos of machines from the past and different places. We will use library books and the internet to research these areas, we will hopefully go to a factory of some sort to see how production has gotten faster and better throughout time.

Reflecting on the inquiry

3. How might we know what we have learned?

This column should be used in conjunction with “How best might we learn?”

What are the possible ways of assessing students’ prior knowledge and skills? What evidence will we look for?

We will start with providing students a collection of broken machines from around the house. Students will look at the insides of these machines to start student inquiry. Once students have gone to each of the tables to explore, they will share out the questions they have to try to find out what we are talking about. We will also be providing pictures of machines as they originally started. We will show a picture of a telegram to represent the first “cell phone”. We will also show a picture of a horse drawn wagon to represent the first “car”, etc. This will help students create a background of how machines have evolved through time. Students will try to create an accurate timeline of these machines. Students will then share their questioning.

What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?

What are simple machines? How are they used in modern machines and technology?

Students will create a Rube Goldberg Machine/marble run after we have discussed the different simple machines. They will utilize all of the different simple machines in their Rube Goldberg. Students will see these simple in modern machines throughout this inquiry. machines

4. How best might we learn?

What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?

1. Explore parts of machines
2. Create a timeline of a machine’s evolution
3. Create a Rube Goldberg : Tanner during Art and Design
4. Create scavenger hunts finding simple machines
5. Create/research a timeline of how an industry has made its production quicker due to machines (newspaper, car, food packaging, etc.)
6. Compare the different machines that are used throughout the world (t-chart, venn diagram)
7. Students will be able to research a machine they use in their daily life (car, phone, blow dryer, iPad, etc). Through this research students will be able to comprehend and analyze the following:
   8. Where do the machine originate from? What would a timeline of the machine look like? Is the machine more useful now? What simple machines are parts of this machine to help it operate? How to connect the creation of machines to everyday problems?

What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?

Transdisciplinary Skills:

Communication Skills/ Presenting: Students collaborate to investigate how their simple machine will solve a problem. Students will have an opportunity to practice their oral communication skills at the inquiry fair.

Self-management Skills/ Organization: Students will learn to organize a task by first investigating, planning and designing and creating their activity for the inquiry fair.

Research Skills/ Formulating questions/ Presenting research findings: Students will be researching machines and their evolution through out time. Students will find the problems that these machines solved.

Attitudes:

- Cooperation: cooperating, collaborating, and leading or following as the situation demands
- Confidence: Students be will informing other students at the inquiry fair about their project. They will need to speak loudly and clearly.
- Appreciation: Students will be respectful of machines that others create and offer positive feedback.
- Creativity: Student will work on creating a machine that solves a problem. Students will create one of a kind machine.
Reflecting on the inquiry
6. To what extent did we achieve our purpose?
Assess the outcome of the inquiry by providing evidence of students’ understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.

How you could improve on the assessment task(s) so that you would have a more accurate picture of each student’s understanding of the central idea.

What was the evidence that connections were made between the central idea and the transdisciplinary theme?

7. To what extent did we include the elements of the PYP?
What were the learning experiences that enabled students to:
- develop an understanding of the concepts identified in “What do we want to learn?”
- demonstrate the learning and application of particular transdisciplinary skills?
- develop particular attributes of the learner profile and/or attitudes?
In each case, explain your selection.
8. What student-initiated inquiries arose from the learning?

Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.

At this point teachers should go back to box 2 “What do we want to learn?” and highlight the teacher questions/provocations that were most effective in driving the inquiries.

What student-initiated actions arose from the learning?

Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.