



## **DRIVING QUESTION**

What do Civil Engineers do? How are bridges constructed?

## **PROJECT SUMMARY**

For this course, learners are engaged by completing a design/build/test activity, documenting all phases of the design/build in a digital portfolio and reflecting on each, and presenting the digital portfolio to a specified audience to demonstrate proficiency of course concepts and skills. Formative evaluations are held throughout the course. Students will build a bridge with balsa wood. Students will document the process and utilize critical thinking skills and an engineering design process in an engineering notebook. A digital presentation will showcase what students have learned through this PBL. A gantt chart will provide a timeline and guide for completion.

## **REAL-WORLD CONTEXT**

Quality standards are calculated by efficiency score, and grading rubric. A healthy peer competitiveness in a light manner gets students excited about this competition. I get students who want to be engineers and they truly geek out on the project and I love that. I also get students who have no idea about engineering or are interested in it, but over 90% of the students still say they enjoy the project and learned how to build, glue, test... just craftsmanship in general.

## **PRODUCTS & AUDIENCE**

Student videos are taken in class of the activities, and zoom meetings for at least 2 days during the process will provide expert input into designs.

## **STUDENT REFLECTIONS**

- “The understanding of different ideas and how we can combine them to make accurate and high quality products was very helpful with the group work.”
- “I was able to dive into the engineering and design process, focusing on problem-solving and implementing new techniques.”

## **NC PORTRAIT OF A GRADUATE SKILLS GAINED**



**COLLABORATION**



**ADAPTABILITY**



**COMMUNICATION**



**LEARNER'S MINDSET**



**CRITICAL THINKING**



**PERSONAL RESPONSIBILITY**

## **TEACHER REFLECTION**

“The PBL process isn’t new to me, but the gold standard aspects pose a new challenge for sure. From the results, I am confident the students put more effort into the project due to the authentic audience, defined goals, and group contracts. On my end, I did find it extremely challenging to organize the authentic audience and keep students on task for an additional week to cover the extra tasks and additional audience days. I think the majority of students' difficulties come from presenting in front of a greater audience and the realism of becoming 'professional' in such a short time. Overall, my aHa moment is take on me, or possibly the sun always shines on tv, both are very good.”