

Grades: 4-5

SciGirls “Process Power”- 4th – 8th grade

Valeria and her friends take action in their Arizona community. These SciGirls partner with an industrial engineer to design a streamlined service plan for a food bank and help high school students in need.

After watching this episode, choose from the following questions and/or tasks to extend your learning

Question Box 1

- Why does Valeria think community service is important?
- How do the SciGirls plan to give back to their community?
- What does the *Meal to Grow* program provide and to whom?
- What is an industrial engineer?
- What does the obstacle course teach the girls about industrial engineering?
- What is the change in results between the different trials the girls tried when packing the balloons in the baskets?
- What did the girls learn about process management?
- Describe the process used at Zak’s Chocolate.
- What industrial engineering concepts did the girls learn at Zak’s?
- How is the process at Zak’s similar to the balloon packing process?
- How do the girls apply what they learned at Zak’s to Matthew’s Crossing? Explain in detail the sequence of events the girls take.
- What evidence do the girls use to prove their solution to the problem at Matthew’s Crossing?

Question Box 2

- What did you learn from the program?
- What resources will you need to learn more about this topic?
- How does the girls experience on the Robot team help them to understand industrial engineering?
- How does teamwork help in process management?
- When have you been a part of a successful team? What was required of you to help the team be successful?
- What stood out in this episode for you?

Box 3 (Tasks)

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- Make a flowchart to show the streamlined service plan the SciGirls designed for the food bank.
- Discuss with evidence the connections between engineers and scientists.
- How many families are fed by the Foodbank per week? What is the average number of people in these households? How would you divide the food to distribute it fairly and in a manner that allows for more balanced meals? Justify your reasoning using mathematics.
- On paper, create (to scale) an obstacle course for your backyard. Think about the spacing and difficulty when designing this course.

Box 4 (Enrichment)

- Do you do chores at home? Identify an activity that is done in your home that could be done more efficiently if you applied the concept of industrial engineering:
 - describe the problem
 - study the existing process
 - plan a new process
 - describe the solution
 - justify if the new process should continue or not

Box 5 (Extend/Real-Life)

- Industrial engineers improve processes by eliminating any waste of time, money, energy, or other resources. They need to understand how every part can affect the entire process and figure out how to balance each part to design the most efficient process.
- Time management – figuring out how long you will need to complete a task — is an important life skill. It's also a key element in the work of industrial engineers. Explore industrial engineering and test your efficiency by seeing how quickly you can get ready for an activity of your choosing.
- Instructions:
- Decide on the activity you are getting ready for (going out to dinner, attending practice for a sport, washing the car, etc.)
- What do you have to wear? What equipment or accessories do you need?
- Time yourself getting ready for the event and write it down.
- Next to your time, write down ideas you have that would make the process faster and more efficient.
- Repeat the process of getting ready again and time yourself.
- Compare your second time to your first time. Did you improve? Why or why not? What more could you do to shave off time to your process of getting ready for this event? Write down your ideas and try again.
- Compare your third time to your first two times. What were your results?
- Continue to evaluate and improve your process until you have your best time.
- Reflect:
- How does being efficient with my time help me be more productive?
- Why would this be important to an employer?
- Why would this be important to you if YOU were an employer?

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- **Social-Emotional Connection:** Helping out others who are in need is a way to build your social-awareness skills. Being socially aware of those around you and in your community is important for building empathy, celebrating diversity, understanding the perspective of others, and respecting others around you. Think about different ways you can help out in your home or community. Research one of those ideas and develop a plan for putting it in action!