

‘Stack em up’ cup challenge — Collaboration

EXPLANATION:

Stack em up is a problem-solving activity that will require groups to work collaboratively together. Participants are introduced to engineering by working in teams to solve a problem. Group members will rely on their communication skills to create a tool using only string and a rubber band that can to stack a group of cups into a pyramid.

YEAR LEVELS: Years 11–12

STUDENT GROUPING: Small group activity (5 people in each group) — plus group presentations

ACTIVITY LENGTH: Dedicate a lesson time for participants to test their tool and complete the task - also time for presentations

LINK TO CURRICULUM:

Representation of General capabilities in Senior English can be linked to this activity:

Critical and creative thinking:

Critical and creative thinking is integral to the study of and creation of texts in *English*. Students analyse and evaluate issues and ideas presented in texts. In both thinking about and creating their own texts, they recognise and develop arguments, use evidence and draw reasoned conclusions. Students experiment with text structures and language features as they transform and adapt texts for different purposes, contexts and audiences. Students use critical thinking when they use their knowledge of language to analyse a range of texts in relation to their purpose, context, audience, structural and language features, and underlying and unstated assumptions. They investigate the ways language is used to position individuals and social and cultural groups. Creative thinking enables students to apply imaginative and inventive capacities in the creation of their own original works.

Representation of General capabilities in Senior Mathematics can be linked to this activity:

Each of the senior secondary mathematics subjects provides the opportunity for the development of informed and reasoned points of view, discussion of issues, research and problem solving. Teachers are therefore encouraged to select contexts for discussion that is connected with sustainability. Through the analysis of data, students have the opportunity to research and discuss sustainability and learn about the importance of respecting and valuing a wide range of world perspectives.

SCOPE OF TASK:

Some notes about collaboration: Successful collaboration and teamwork require communication, active listening, problem solving and a cooperative spirit. Collaboration supports the building and maintaining of relationships. Skills associated with collaboration include: acknowledge others' skill, contributions, experience and creativity; listen and acknowledge the opinions, ideas, concerns and feelings of others; share credit for good ideas with others and give and seek input from other team members.

1. This task requires a good deal of engineering thinking in addition to teamwork! Tell the students that this activity will require a lot of collaboration and teamwork. Activate students' prior knowledge about collaboration and pose questions to elicit their knowledge and experience of collaboration. They might be able to provide examples of successful and unsuccessful experiences of teamwork.
2. Arrange students in groups of approx. 4 – 6 people or allow to self-select.
3. Share the objective of the activity with the students: The challenge is for the group to build a pyramid out of the paper cups (3 on the bottom, 2 in the middle, 1 on the top) – more cups can be used! However, there are rules which must be abided by to complete the task:
 - Group members cannot touch the cups with their hands or any other part of their bodies
 - Group members must prep with creating an 'octopus' with the activity resources:
Prep Instructions for each group:
 - Each group to cut 5 pieces of string into long pieces (approx. 60cm)
 - Tie each piece of string to a rubber band (evenly spaced apart) -you will have what looks like a five-legged octopus
- Each group is to attempt to build a pyramid using the 'octopus'
- The group with the most intact pyramid is the winner

Reminders and hints:

- Group members cannot touch the cups with their hands or any other part of their bodies
- Each person must hold on to one of the strings that is attached to the rubber band
- The 'octopus' is used to pick up the cups and place them in the pyramid
- Pulling the strings pulls the rubber band apart and then releasing the strings brings the rubber band back together over the cup



4. Provide each group 10mins to strategize how they will complete the task and then teams are given a start and finish time – approx. 15mins.
5. At the completion of the activity time each group can show their pyramid and provide details about how they worked together to create the pyramid. Ask students to share details about how they operated. Some questions could include:

- What were their successful strategies and not so successful strategies (those that hindered the group work)?
 - Was there a leader in your team? Did this person step up as the leader, or, were they elected?
 - How did your team communicate?
 - Did the group experience any frustrations?
 - What would they do differently next time?
 - Are you ever in a situation where you must use teamwork? Is this always easy for you? Why or why not?
 - How can we use what we learned through this experience in situations outside the game?
6. In reflection, question the students to identify what skills are critical to collaboration – document these on a whiteboard for students’ reflection.

RESOURCES:

- Plastic cups
- String
- Rubber bands
- Whiteboard