

STEMify Low Ropes

Up Close

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NGS Standards:

PS2 Motion and Stability
ESS3 Earth and Human Activity
ETS1 Engineering Design

Time:

Plan/design: 0 minutes
Activity/testing: 10-20 minutes
Group Processing: 3-5 minutes

Materials:

Up Close element which consists of 3 increasingly smaller platforms

STEM Themes:

Leverage/counterweight
Population Density
Estimating

Team Building Themes:

Listening
Loyalty
Patience
Resilience

Permission:

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Activity Objective

The group (of 12 or less) will work together to stand on platforms of increasingly smaller surface area. To accomplish this the team must work together, communicate effectively, and use a physics mindset. As the platforms get smaller, the team will no longer be able to just “group hug” to make it work; rather, they will need to hold hands across the platform with a like-weighted individual (forms like an asterisk symbol) and lean back on just one foot. Once the participants reach the final/smallest platform, they may need occasional encouragement and support from the instructor.

Opening Inquiry

AFTER the first platform, lead the group in a discussion that will begin the planning stage of this challenge by asking a few guiding questions:

- ♦ What is the safest way to securely get everyone on your team on the platforms at the same time?
- ♦ Are there any scientific concepts that could make this element easier?

Set Up

Don't give the group much time to plan before the first platform, but suggest they come up with a stronger plan prior to each new one. *Facilitator: listen for themes you can draw out at the end.*



—continued—



Safety in Focus

The primary safety component of this activity is **keep a foot in contact with the platform at all times.**

Facilitators should ensure that the participants are never attempting to put people on shoulders, standing on one another's feet, carrying others, etc.

Other rules to share with the group related to safety:

- ◆ Do not get into such a knotted/twisted group position that you fall off the platform in an unstable way.
- ◆ There *will* be personal space issues with this activity. Be sure to be respectful throughout.
- ◆ Tiny/small people are often bossed about during this activity. Ensure they have a good voice.

Procedure Perfect

Even the best group will likely be lazy early on and recognize that they can basically just do a group hug at the first (and maybe the second) platform.

However, the perfect group will strategically consider the concept of counterweight. They will partner up with a like-weighted individual and then stand opposite of them on the platform (with only one foot) and use their hand-hold as the balancing mechanism. Partnerships repeat until simultaneously on the platform for a count of three.

The diagram below is a representation of a typical three-platform Up Close element. If you are building one, make sure the smallest platform is challenging to a group of twelve individual feet.



Easy

Medium

Hard

—continued—



Facilitator Tips

Consider the following as the activity unfolds:

- ◆ Are there any safety concerns you need to immediately address?
- ◆ Is everyone maintaining involvement, at least through words of encouragement or support? Particularly, are the overweight and tiny people actively involved?
- ◆ What STEM words do you hear utilized by the group in their planning and testing?
- ◆ Does the level of challenge seem about right? Should an *Increasing the Challenge* be added?

Increasing the Challenge

1. Complete the activity in silence.
2. If the ground and platform surfaces are smooth, complete the activity shoeless to encourage less muscular attempts at completion.
3. Instead of staying “airborne” for 3 seconds, have them sing a song while “elevated.”

Variation

NA

Processing the Activity

Spend 2-3 minutes discussing the following questions before moving on to the next activity:

- ◆ In what ways did your team work well together? What might you have done differently?
- ◆ What science and math skills did you use to complete this activity?

As appropriate, review the unmentioned/remaining *Themes* from page 1 to ensure group learning.

Citation

As noted in “permissions,” you must request permission from the author to utilize this curriculum (in part or whole) for teaching purposes. If you wish to cite this resource in a book or article, here is the APA citation for your convenience:

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UP CLOSE

Materials: Are the areas surrounding the platforms free of sticks/debris? Platforms clean?

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Team Building Themes: Listening; Loyalty; Patience; Resilience

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