STEMify Low Ropes
Alligator Alley

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NGS Standards:

Connections to Math
PS2 Motion and Stability

Time:

Plan/design: 5-10 minutes
Activity/testing: 15-25 minutes
Group Processing: 5-7 minutes

Materials:

Paper plates or rubber disks

STEM Themes:

Distance
Estimation
Order of Operations
Scientific Method

Team Building Themes:

Planning
Patience
Communications
Cooperation

Permission:

Activity Objective

The group will work together to cross over a river filled with alligators. The group will have "rocks" to use to get across from one side of the river to the other. The main objective is to get each member across to the other side without touching the ground (being swallowed by the river or a gator), while using the least number of rocks.

Opening Inquiry

Lead the group in a discussion that will begin the planning/design stage of this challenge by asking a few guiding questions:

- What aspects of the challenge do you need to consider before you begin?
- How will you get each member across to the other side without touching the ground?
- Are there any physical or emotional safety concerns you should factor in to your plan?

Set Up

Give the group 3-5 minutes to plan and design how they will successfully get each member of their group across the river. *Facilitator: listen covertly for themes you can draw out at the conclusion of the activity.*

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Safety in Focus

The primary safety component of this activity is ***safe walking***. Facilitators should ensure that the participants are taking their time and moving safely on the (somewhat) slippery surfaces.

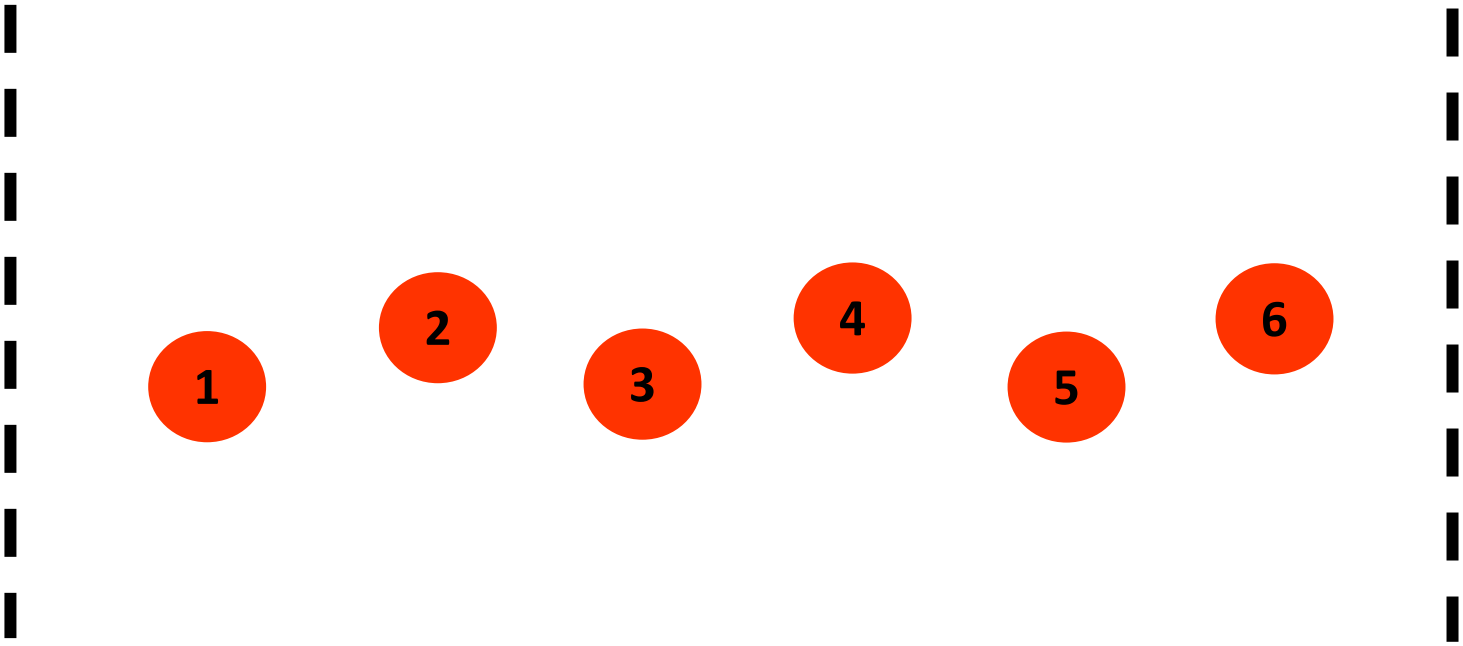
Other rules to share with the group related to safety:

- Only one person may be on a rock at a time.
- No running or heroic jumping.
- If you fall into the water, the instructor will ask you to start over.
- No throwing or sliding the rocks at any time. A good teaching phrase is "they are rocks, not Frisbees."

Procedure Perfect

The perfect group will recognize from the beginning that they must cross in teams of two utilizing only three rocks. One person will lead and place one rock a small step in front, then step onto it. He/she will then place another rock out a little further, and step onto it. At this point, the second person will step onto the empty rock. Then the third rock will be placed out in front, and both will advance one rock. The back/empty rock will be picked up and moved to the front. Repeat until done. Then one of them will return individually with all three rocks to get a new teammate. The best groups will do this with encouragement and patience.

The diagram below is a representation of Alligator Alley. Because you will give them more rocks than they need, they will likely utilize the scientific method of hypothesizing, testing, and trying again several times before they are successful.



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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?
- 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. Rather than just allowing a "do over" when someone falls in the water, add a gator-induced injury such as a broken foot (have to hop on one leg) or arm (have to hold it continuously behind their back).
2. For advanced groups, start them with just the three rocks from the beginning. Beware that this may reduce scientific teaching opportunities.
3. For very advanced groups, give only the three rocks and add a time limit. Be sure that frustrations do not boil over and safety remains paramount.
4. Spread a set of progressively smaller rocks 8' apart from one another across the river. Provide a 6' board. Follow similar rules, but this time only the board can be moved—the rocks remain in their locations. For top notch groups only.

Variation

If you need to improve the groups usage of encouragement and positive language, add a race. Split the group into two equal teams and use Increasing the Challenge #3 from above. Once one team figures it out, the other team will quickly follow suit. This will produce a frantic ending that often brings out poor language—giving you a lesson opportunity.

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:

> Sedlak, K. (2014). *STEMify Low Ropes: Alligator Alley* [Program of Studies]. Retrieved from the Ohio State University Extension website: http://go.osu.edu/stemropes

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Date Created: February 2014

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Materials: Do I have enough "rocks" (paper plates or rubber discs) for the size of today's group?

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Safety: The primary safety component of this activity is ***safe walking***. Facilitators should ensure that the participants are taking their time and moving safely on the (somewhat) slippery surfaces.

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