

# STEMify Low Ropes: A Curriculum Advancing STEM in Camp Settings

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## Permission:

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## Welcome

This curriculum (and guide) comes to you from an experienced team of outdoor educators. We hope all educators will find it to be a useful supplement in adventure camping programs, afterschool clubs, and other team building settings. Even those with limited science, math, and recreation skills will find this curriculum to be a valuable tool.

## Purpose

STEMify Low Ropes is exactly what it sounds like—it incorporates elements of science, technology, engineering, and math into traditional low ropes activities. If you have found that schools and granting agencies are requiring more substantive connections to science and math in order to secure participation or funds, this curriculum will help you to bridge that gap.

## Ease of Use

You do not have to be an experienced science/math instructor or outdoor educator to use this curriculum. It is designed to take any modestly trained educator through the necessary instructional components. That being said, many of these activities have been written with the understanding that a typical low ropes course will already be available to you. The diagram and picture pages should assist you in matching your course to the names we have utilized.



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## What are Low Ropes?

There are a lot of names out there to describe low ropes activities. You may have heard cooperatives, team building, low adventure, or similar names. Regardless of the name your site uses, this curriculum is specifically geared toward the following:

- ◆ Courses that require minimal levels of instructor training and certification.
- ◆ Activities in which participants do not go higher than ten feet off the ground.
- ◆ Activities in which participants are not harnessed or on belay.
- ◆ Activities that work to build teams through cooperation, positive communications, and problem solving in an “own the outcome” environment.

## Own the Outcome Philosophy

Groups participate in low rope activities because they are trying to build a team. As such, every low ropes activity seeks to challenge a team’s typical weak points—poor communication, lack of trust, etc. For the team to be strengthened, these issues must be resolved throughout the learning experience.

Facilitators will want to share the Own the Outcome philosophy with the group during the orientation phase. A boilerplate orientation speech would sound something like this (using your best coach voice):

*Today you will be pushed and stretched in ways you have rarely experienced before. You will accomplish activities as a group that you could not have done alone. Along the way, you will face moments of frustration, anxiety, and failure. But you are a team. When your teammates are struggling, you will encourage them! When they behave selfishly, you will remind them of your central purpose here today—to become a better team. This journey will not be easy, but the outcome is worth your best effort. Own the outcome; become a team today!*

## How to Facilitate

A typical low ropes course experience lasts approximately three hours, with a small break in the middle. Depending on the size and cohesiveness of the group, they will complete four to five activities during this time. The skilled facilitator will select activities based on the areas of deficiency that are observed in the earliest activities.

When leading low ropes activities, it is essential to remember that you are a facilitator, not a teacher. Instead of offering answers, you will typically ask questions. Instead of ensuring that a set of key concepts are learned, you will draw upon the words and phrases you hear expressed by the group. You are an expert listener. You may even become a good storyteller, particularly for reluctant groups who need a little spice to engage.

More specifically, the facilitator will want to focus on four thoughts during the activity—safety, lowlights/highlights, and what’s next. Here are a few mental questions to cycle through during the activities:

### SAFETY

- ◆ Is anyone behaving recklessly enough that I should step in?
- ◆ Are they breaking any safety rules that we discussed prior to beginning the activity?

### POTENTIAL LOWLIGHTS or HIGHLIGHTS

- ◆ Is everyone involved in the decision-making?
- ◆ Does everyone have a role?
- ◆ What is the level of positive vs. negative communications amongst the group?
- ◆ How are they responding to the mini-failures?

### WHAT’S NEXT

- ◆ Based on their attitude and skills thus far, what activity should I lead them in next?
- ◆ What teambuilding or STEM elements will I skip over this time, in anticipation of using later?

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## How to Use this Curriculum

At this point, you should have a good understanding of the purpose of STEMify, low ropes, philosophy of experiential education, and facilitation strategies.

The next step is to give a play-by-play of the activity sheets so you know where to find the information you are looking for. It will be helpful to have one of the activity sheets on hand as this explanation goes along. The play-by-play is arranged chronologically.

### NGS Standards

Some of the leading minds in science and math have come together to generate the Next Generation Science Standards. We have chosen to utilize them in anticipation of their widespread adoption into the mainstream educational community. They are listed to give formal educators a framework to guide pre and post low ropes conversations and instruction. To find out more about the NGS Standards, visit:

[www.nextgenscience.org](http://www.nextgenscience.org)

### TIME

This is a guide for how long it would take an average group of twelve junior high youth to plan a strategy for the activity, complete the activity, and process it with the facilitator at the end. One additional comment to make about time: as you become a more skilled instructor, you will know “when to say when.” There are times that an activity should be moved on from because the group is stuck and will not move forward no matter what you do. Usually this can be avoided by sharing pretty overt tips after a good deal of trial and error amongst the groups.

### MATERIALS

For this section, we assume that you have a permanent low ropes course to work with. As such, we will name the element and the small supplies that need to accompany it. To prevent confusion, we do not list the supplies that may be used under “variations.”

## STEM THEMES

Here we list the science, technology, engineering, or math phrases that are easy to cycle-in to the post-activity conversations. This is by no means an all-inclusive list, but should be enough to spark experiential learning amongst the participants. Each word listed is also related to one of the NGS Standards listed at the beginning.

## TEAM BUILDING THEMES

Here we list the components of team building that are most likely to fail during this activity. As such, they are the themes you will watch out for and discuss during the post-activity discussion. As always, there are many more that you can utilize depending upon the strengths and weaknesses of the group.

## PERMISSION

In order for OSU Extension to offer resources like this for free, we have to be able to note the impact that our work is having. One of the ways for accomplishing this is by having you seek e-permission prior to usage. Bonus: If you have a good story to tell about a successful STEMify Low Ropes session, please share that later if you are able!

## ACTIVITY OBJECTIVE

This section explains what the group’s overarching task is for this activity. It will also share a few house-keeping items for facilitators to keep in mind. Without reciting it word for word, this section will be shared with the group during the activity’s orientation speech.

## OPENING INQUIRY

Great experiential (and scientific!) learning is done through the inquiry approach. As such, the facilitator will want to ask questions that put the group in the right frame of mind. The facilitator will share these questions with the group after discussing the objective. Resist the urge to provide answers!

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## How to Use... *[continued]*

### SET UP

This is primarily a reminder to give the group some time to strategize. They will be eager to just dive right in, and it is your responsibility to say something like, “Now that I have explained the objective and given you some questions to think about, I want you to spend the next three minutes or so creating a strategy for how you will accomplish this activity as a group.”

### SAFETY IN FOCUS

You are probably wondering why we did not list this section until now, right? Our experiences teach us that most of the strategy questions the group will have during their three minutes of processing relate to safety or “cheating” methods. You will take this as an opportunity to share the safety rules for the activity. Doing it now makes it feel more natural to the event and prevents the overall experience from feeling like a rules-based, “don’t do this” learning environment. We want our participants to think creatively, not defensively!

### PROCEDURE PERFECT

Typically, there is one perfect way to complete the activity, and we have listed it here. You will use this as a means of comparison to the group you are leading. If they go down false rabbit trails, resist the urge to fix them. Soon enough, they will realize the error of their ways and have to start over again.

Many groups will accomplish the task in a less than perfect way. This provides you a great opportunity to discuss the importance of planning, listening to everyone’s ideas at the beginning, etc. during the post-activity discussion time.

### [DIAGRAM]

To ensure you are at the right low ropes element, a diagram is provided. Most of the time, the diagram is provided in a sky view format.

### FACILITATOR TIPS

For the novice outdoor educator, these tips will help you to focus in on the safety, challenge, and lesson oriented components of the activity. These are mainly reminders of the “How to Facilitate” section presented earlier in this overview.

### INCREASING THE CHALLENGE

The most fun you will have leading these activities occurs when you get a top notch group that needs to be pushed. This section is for them. Rarely will you use an “Increasing the Challenge” during the first activity of the day, because you are still establishing the groups baseline level of competency. Once you have observed their advanced proficiency, these will become pieces you can add (from the beginning) of future activities.

### VARIATION(S)

By the same token, there will occasionally be groups that cannot accomplish the activity at the baseline level. Perhaps they have an injured member they wish to accommodate. Maybe they are a truly dysfunctional group that needs only minor success to feel positive about their team. The variation section is for groups like this. Again, you are unlikely to know the need for “scaling back” an activity until you have observed their baseline level of proficiency.

### PROCESSING THE ACTIVITY

The group will not (usually) want to take a pause and discuss the activity. They are excited for the next one! Regardless, it will be difficult for them to gain much from today’s experience if you don’t help them to see the forest from the trees. As always, spend this time asking leading questions based upon the positive and negative behaviors you observed. Discuss the STEM elements you noticed them utilizing and one or two they missed that might have helped them out. No matter what, keep this time brief. After three minutes, you will lose them. Move on!

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## How to Use... *[continued]*

### CITATION

Many camp and outdoor education settings will adapt curricular materials to their local needs. Great! If you use ours locally or in print, please cite it. This is good ethical behavior and helps us to decipher the impact of our work. We have helpfully provided the latest APA citation so that you may cut and paste.

### PICTURE PAGE

We have attempted to provide a visual representation of a group successfully completing the various stages of the activity. Occasionally, we have also added some of the common safety or pitfall issues that accompany a particular activity. May these pictures give you a decent idea of what you will be looking for as the group proceeds.

### CHEAT SHEET

We envision these being cut and laminated, collated with the rest of the activities in the series and held together by an O ring. If you have a storage shack for your outdoor adventure area, this would be good to have hanging inside as a reference piece. Even experienced facilitators will want to brush up on these highlights from time to time.

## Ready to Go?

Experiential education is just that, experience-based. Just like the participants, the only way to become a great facilitator is to get out and lead these activities. As you gain experience and confidence, continue to refer back to these curricular materials for professional support.

If you find that you are specifically struggling with an issue, we can help. Send us an email note and we'll set up a time for a free consultation. We are more than happy to advance the profession of inquiry-based, experiential education. Best of luck and ask good questions!

## Further Resources

The knowledge base for low ropes courses and activities is remarkably limited. STEMify hopes to add significantly to this base. For your additional investigation, we have included some of our favorite resources related to low ropes activities:

### Great for the Storytelling Aspect

Clyde Austin 4-H Center (2014). *Clyde Austin 4-H Center Challenge Course Curriculum* [Program of Studies]. Retrieved from the Kansas 4-H website: <http://www.kansas4h.org/doc7486.ashx>

### For the Full Picture

Rohnke, K., & Project Adventure, Inc. (1989). *Cowstails and cobras II: A guide to games, initiatives, ropes courses & adventure curriculum*. Dubuque, Iowa: Kendall/Hunt Pub. Co

### For Advanced Training and Construction Resources

Association for Challenge Course Technology  
<http://www.acctinfo.org>

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