

**5th Grade Fall Program
Being Outside Rocks**

Grade Level: 5th

Length of Lessons:

5 th Grade AM	2 hours	5 th Grade PM	2 hours
Arrive/Intro (10)	9:00-9:10	Arrive/Intro (10)	12:00-12:10
Station 1 (30)	9:10-9:40	Station 1 (30)	12:10-12:40
SWITCH SITES	9:40-9:45	SWITCH SITES	12:40-12:45
Station 2 (30)	9:45-10:15	Station 2 (30)	12:45-1:15
SWITCH SITES	10:15-10:20	SWITCH SITES	1:15-1:20
Station 3 (30)	10:20-10:50	Station 3 (30)	1:20-1:50
Conclusion (10)	10:50-11:00	Conclusion (10)	1:50-2:00

5 th Grade DMCS	1.5 hours
Arrive/Intro (10)	12:00-12:10
Station 1 (20)	12:10-12:30
SWITCH SITES	12:30-12:35
Station 2 (20)	12:35-12:55
SWITCH SITES	12:55-1:00
Station 3 (20)	1:00-1:20
Conclusion (10)	1:20-1:30

Objectives:

- SWBAT identify trees using a dichotomous key.
- SWBAT define what a continuous line transect is.
- SWBAT describe how to safely practice archery.
- SWBAT describe how to safely slackline.

Minnesota Academic Science Standards

- 5.1.1.1.1 – Explain why evidence, clear communication, accurate record keeping, replication by others, and openness to scrutiny are essential parts of doing science.
- 5.1.1.1.2 – Recognize that when scientific investigations are replicated they generally produce the same results, and when results differ significantly, it is important to investigate what may have caused such differences.
- 5.1.1.1.3 – Understand that different explanations for the same observations usually lead to making more observations and trying to resolve the differences.
- 5.1.1.1.4 – Understand that different models can be used to represent natural phenomena and these models have limitations about what they can explain.
- 5.1.1.2.2 – Identify and collect relevant evidence, make systematic observations and accurate measurements, and identify variables in a scientific investigation.

AAAS Project 2061 Benchmarks

1A/E1* – Sometimes similar investigations give different results because of differences in the things being investigated, the methods used, or the circumstances in which the investigation is carried out, and sometimes just because of uncertainties in observations. It is not always easy to tell which.

1A/E2** – Science is a process of trying to figure out how the world works by making careful observations and trying to make sense of those observations.

1B/E1* – Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.

Core Knowledge Sequence for Science

N/A

Materials

Archery- bows, arrows, arrow holders, rubber mallet, targets.

Slacklining- slackrack, classic slackline, primitive slackline, tree padding.

Tree Survey- dichotomous keys, 5 50' lines of string, clipboards, pens, worksheets

Location

Intro/Conclusion- IC classroom

Archery- North side of IC

Slacklining- South side of IC

Tree Survey- Owl Valley

Background Information

- Continuous line transect sampling- this is a way of finding out what is living on a particular gradient. For this program that means finding out what tree species are living in Owl Valley. A line will be set up and students will travel along the line, identifying each tree that is touching the line. This will give River Bend a good idea of what tree species are living in Owl Valley.
- Dichotomous key- A dichotomous key is usually a written device constructed from a series of highly organized statements arranged into couplets. A couplet consists of (typically) two descriptions which should represent mutually exclusive choices (often it is a particular combination of characteristics that determines the difference). Both choices are read and compared with the specimen to be identified. Once a decision is made, that selection directs you to another couplet (either the next in order or one further on in the key), and this process is repeated until a conclusion (successful identification) is reached.
- Succession- The forests, being an ecological system are subject to the species succession process. There are "opportunistic" or "pioneer" species that produce great quantities of seed that are disseminated by the wind, and therefore can colonize big empty extensions. They are capable of germinating and growing in direct sunlight. Once they have produced a closed canopy, the lack of direct sun radiation at soil makes it difficult for their own seedlings to develop. It is then the opportunity for shade "tolerant" species to become established under the protection of the pioneers. When the pioneers die, the shade tolerant species replace them. These species are capable of growing beneath the canopy, and therefore, in the absence of catastrophes, will stay. For this reason it is then said the stand has reached its climax. When a catastrophe occurs, the opportunity for the pioneers opens up again, provided they are present or within a reasonable range.
- Slacklining- Slacklining is a practice in balance that typically uses nylon or polyester webbing tensioned between two anchor points. Many people suggest slacklining is distinct from tightrope walking in that the line is not held rigidly taut (although it is still under some tension); it is instead dynamic, stretching and bouncing like a long and narrow trampoline. The line's tension can be adjusted to suit the user and different types of webbing can be used to achieve a variety of

feats. The line itself is usually flat, due to the nature of webbing, thus keeping one's footing from rolling as would be the case with an ordinary rope. The dynamic nature of the line allows for tricks and stunts. Slacklining has quickly become popular due to its simplicity and versatility and its ability to be practiced in a variety of environments. Those who participate in slacklining are often called "slackers".

- Archery- Archery is the art, practice, or skill of propelling arrows with the use of a bow, from Latin arcus. Historically, archery has been used for hunting and combat, while in modern times, its main use is that of a recreational activity. A person who participates in archery is typically known as an "archer" or "bowman", and one who is fond of or an expert at archery can be referred to as a "toxophilite".

Prior to visiting River Bend (for teachers)

- Please discuss what continuous line transect sampling is and why it is useful.
- Please discuss what dichotomous key is and how to use one.

Extensions/Resources (for teachers)

Information about line transects- http://www.countrysideinfo.co.uk/wetland_survey/line.htm

Information about dichotomous keys- http://www.biology-online.org/dictionary/Dichotomous_key

Video about slacklining- <http://www.youtube.com/watch?v=1GJ6HzOevwM>

A brief, interesting article on the history of archery- <http://www.worldarchery.org/en-us/home/history/historyofarchery.aspx>

References

N/A