Orienteering II

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Program Purpose:
The purpose of this course is to teach students the basics of map and compass work and to prepare them for a course on Blackhawk Island. **Students must have completed Circle Compass Course (Orienteering 1) before participating in Orienteering 2.

Length of Program: 2 Hours

Ages: Grades 4th-12th

Maximum Number of Participants: 16

Objectives:
After completion of this course students will be able to:
- Name the parts of a compass and know the function of each part.
- Define paces and tallies and be able to use them in a real world situation.
- Demonstrate proper use of radio terminology.
- Use a map and compass to find their way through the woods without adult supervision.

Wisconsin Standards:
D.8.1 Identify and describe attributes in situations where they are not directly or easily measurable (e.g., distance, area of an irregular figure, likelihood of occurrence)
D.8.3 Determine measurement directly using standard units (metric and US Customary) with these suggested degrees of accuracy (e.g. angles to the nearest degree)
E.8.1 Participate in a variety of health-related activities in both school and nonschool settings in order to maintain a record of moderate to vigorous physical activity
F.8.6 Work cooperatively with a group to achieve group goals in competitive as well as cooperative settings

Preparation:
Before the class arrives:
- Find the four "Color" courses and "Color" course key in the Orienteering 2 box.
- Get the Suunto 20-compass kit from the work room.
- Make sure the four 2-way radios are charged and functioning.
- Make sure all radios are on channel seven (including your own radio!)

Basic Outline:
I. Basic needs (5 min)
II. Compass use (15 min)
III. Pacing (5 min)
IV. Depart for Island (15 min)
V. Targets (5 min)
VI. Radio use (5 min)
VII. Course Work (45 min)
VIII. Back to Mainland (15 min)

Materials:
20 Compasses
4-6 Course Maps
Course keys
1 Cell Phone
4 radios
Extra charged AA batteries
Four whistles

Basic Needs:
Define the three basic needs of orienteering:
1. Start from a known location. You have to know where you are on the map for the map and compass to be useful.
2. Travel a known direction. You need to know what direction to travel to find your next point.
3. Travel a known distance. You need to know how far away the next point is to make sure you do not under or overshoot your target.

Compass:
Have the students form a semi-circle and pass out the compasses.
- First, demonstrate the proper way to hold a compass. To properly hold a compass you should have the compass level in your hand and hold it a few inches from your body. The 'that-a-way' arrow should be facing the same direction as your nose and the smart cord (string that goes around your head) should be attached to the side closest to your body. It is important to make sure all students are holding the compass level or the needle will not move properly.
- Second, explain the 'that-a-way' arrow (Fred) and its purpose. The 'that-a-way' arrow is the painted on arrow that is located on the plastic plate in front of the dial. This is the arrow that they will follow every time they take a bearing. Make sure they know this is the arrow that will be pointing the correct direction when all of the following steps are done correctly.
- Third, point to Red (the north arrow) and explain that it is drawn magnetically to the north. It is a very common mistake to follow Red and get lost so make sure you emphasize that "Red is a liar". Ask the students which direction Red will take them (north) and if that is the direction they always want

to walk (no). You cannot emphasize enough that Red is pointing the wrong direction 99% of the time.

- Fourth, show the students where the Shed is. Shed is located inside of the dial. Shed is painted on and only moves when the dial is turned. It can be located easily by looking at the dial and finding the N. Shed is always pointing at the N. Shed and Red are friends so you should turn your body so Red is directly on top of Shed.
- Fifth, show the students the dial. Ask the students how many degrees are in a circle. There are 360 degrees in a circle and 360 degrees on your compass. The students should know that each white dash on the dial represents two degrees so the odd degrees are located in between the dashes.
- Sixth, point out the bearing notch. This is a small white line under the dial. It can be found by looking at the 'that-a-way' arrow and following it back to the dial. The bearing notch never moves and is always directly lined up with the 'that-a-way' arrow.

Now that the students know the parts of the compass you can show them how to use them to set a bearing. Choose a bearing to begin with: 200 degrees, for example.

To set a bearing:

I. Turn your compass until 200 degrees is directly on top of the bearing notch. Walk around to each student to check.
II. The students should all be holding their compasses in the proper form.
III. All students should now turn their bodies until Red is on top of Shed. Make sure the students do not just turn the compass, but their whole body. It may help to tell them their noses should always be pointing in the same direction as the 'that-a-way' arrow and their necks cannot turn.
IV. Red should now be on top of Shed, so ask the students to point in the direction they should walk. Go around to all students that are pointing the wrong direction. The most common problem here will be that they are pointing north, so reiterate that Red is a liar and show them the 'that-a-way' arrow again so everyone is pointing the same direction.
V. It may help to teach them this easy phrase: "Put Red in the Shed and follow Fred."

Keep practicing until all of the students are confident in setting a bearing. This will probably take three to five tries.

Pacing:

A pace is simply two steps. Each leg has a function. The right leg is the "and" leg. This means that every time the right leg touches the ground they should say "and." The left leg is the counting leg. Every time the left leg hits the ground they should count another pace. When they are pacing they will be saying "and one, and two, and three, etc." Have the students take a few paces in the classroom.

When they understand paces, introduce tallies. A tally is a unit of measure used when the students reach seventy paces (roughly 100 meters for a six-foot tall U.S. Army Private). The reason we use tallies is because the paces would become very large numbers if we did not break them down a bit.

Give a few examples of how the pace count will look on their maps. (2T 28P_1T 56P) and have the students tell you how far they should walk (70 paces + 70 Paces +28 paces _ 70 paces + 56 paces). It is a good idea to have them practice pacing on their way to the boat.
2 Steps = 1 Pace
70 Paces = 1 Tally
1 Tally =100 Meters

Depart for Island
Load students on the barge or in canoes for the trip to Blackhawk Island. P.F.D.'s are mandatory.

Final Instructions:

Hand out the four Color course maps and explain the point numbers (point numbers on the map correspond with the numbers on the signs nailed to trees on the island), the pace, and bearing columns. Students should be divided into teams of no more than four and given their maps. Explain what targets are and their purpose. A target is an object (a person or a tree) that is exactly in their direction of travel. Targets are used to keep you walking straight in the woods. People have a tendency to drift to the right if they do not have a fixed object to walk towards. List the jobs the members of the group will have (compass person, target, pacer, and map person) and make sure they rotate jobs.

- The first job is the compass person. The compass person is responsible for leading the group in the correct direction. S/he will set the bearing and direct the target person on where to stand (or find a target tree if there is no target person). When the compass person has placed the target, s/he should drop the compass and walk in the straightest line possible to the target. When the compass person has reached the target, s/he will recheck the bearing and direct the target person where to stand again. This process continues until the pacer says the group has traveled far enough.
- The second person is the target. The target is directed by the compass person to line up directly with the bearing. A target person is more convenient to use than target trees, because a target person can adjust where they stand to be directly in line with the bearing.
- The third person is the pacer. The pacer's job is to count the paces and inform the group when it has traveled far enough.

- The fourth person in the group will be in charge of the map. This person is responsible for telling the compass person what bearing to set and informing the pacer how many paces to travel.

When the group has traveled the correct distance, they should get together with the map and start to search the area for their orienteering point. When they find it, they should radio in to base.

Radio Use:
Each team will have one radio. The radio is not to be treated as a toy. The best way to prevent horseplay on the radio is to tell them the FCC monitors all radio use and will pull our right to use them if they are not being used properly. There is only three times when the radio can be used.

I. When you have found your next point.
II. When you are temporarily misplaced.
III. Emergency situation.

At no point can a group talk to another group only to base.

There are three words that need to be introduced for proper radio communication.

I. Over
II. Out
III. Copy

I. Over is said at the end of a transmission and implies that you are waiting for a response.
II. Out is used at the end of a transmission when the conversation is through.
III. Copy is used when information has been given to signify the recipient understood the transmission.

Examples:

- "Green group to base OVER."
- "Go ahead green group this is base OVER."
- We are heading for our third point OVER."
- "O.K. green group I COPY, OUT."

After the group understands the radio commands have them turn the radios on and give it a try. Stress the importance of waiting until the previous conversation is over before you try to contact base.

Course Work:
Students will be on 5-point courses depending on time constraints and the ability of the class. They are all leaving from the same starting point, and ending near the trail. All of the information they need to complete the course is on the back of their maps. Send one adult up the Overland Trail (toward the caves) with a whistle and one adult towards the dock with a whistle.

Send the students on their way and get ready to begin receiving transmissions. As the groups find their points, mark down which points have been completed on the master to help you keep track of their location. It is also helpful to keep track of the time each group calls in to make sure you keep in contact with all groups at least every ten minutes. If a group calls in "temporarily misplaced," you need to get all the information from them you can. You are looking for some kind of idea where they are by the distance they traveled and what bearing they were following. Most of the time they have just not traveled far enough. If you have them put red in the shed and take ten paces with everyone's head up there is a good chance one of them will see it. If the group is hopelessly "misplaced," you or the adult closest to where you think the group is should blow the whistle three times every minute. Radio the student group to walk towards the sound.
If a group finishes one course, give them the "Beauty" or "Acorn" course to try.

When time is up, radio all the groups to come back to base from wherever they are. Have all groups report in that they copied the transmission, then you and the adults should blow your whistles five teams every minute until all groups make it back to base.

Back to Mainland:
After arriving on the mainland, the instructor should collect maps and compasses and return them to their original location. If time remains it is easier on the instructor to let the students put away the compasses.

References:

Disley, J. (1979). Orienteering, Harrisburg, PA: Stackpole Books

Kjellstrom, B. (1955). Be an expert with map and compass, La Port, IN: American Orienteering Service

Ratliff, D. (1964). Map, compass and campfire, Portland, OR: Binfords & Mort

Van Burgh, D. & Lyons, E. (1998).

Teach with topographic maps, Arlington, VA: National Science Teachers Association

Riley, M. & Cremer, R. (1979). Basic orienteering, Chicago, IL: Contemporary Books, Inc.

Appendix A
Wisconsin Model Academic Standards

Math
A.8.1. Use reasoning abilities to evaluate information, identify relationships, and test reasonableness of work

A.12.1 Use reason and logic to
- *Evaluate information*
- *Identify relationships*

D.8.3 Determine measurement directly using standard units (metric and US Customary) with these suggested degrees of accuracy
- *Length to the nearest mm or 1/16 of an inch*
- *Angles to the nearest degree*

D.12.2 Select and use tools with appropriate degree of precision to determine measurements directly within specified degrees of accuracy and error (tolerance)

Physical Education
D.8.1 Feel satisfaction when engaging in physical activity

D.8.2 Recognize the social benefits of participation in physical activity such as the joy of participating with a team and sensing team fulfillment

D.8.3 Enjoy learning new activities

D.12.1 Derive pleasure from participating in physical activities in competitive and recreational settings

Standards (by activity)
COURSE WORK
Math
A.8.1, A.12.1, D.8.3, D.12.2

Physical Education
D.8.1, D.8.2, D.8.3, D.12.1

Math
A.4.1 Use reasoning abilities to identify relationships and justify strategies
A.4.3 Connect mathematical learning with other subjects, personal experiences, current events, and personal interests
- *See relationships between various kinds of problems and actual events*
- *Use mathematics as a way to understand other areas of the curriculum*

A.8.1. Use reasoning abilities to evaluate information, identify relationships, and test reasonableness of work
A.12.1 Use reason and logic to
- *Evaluate information*
- *Identify relationships*

B.4.5 In problem solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as
- *Recalling the basic facts of addition, subtraction, multiplication, and division*
- *Using mental math*
- *Estimation*

C.4.3 Identify and use relationships among figures, including but not limited to
- *location*
- *position*
- *intersection*

C.4.4 Use simple two-dimensional coordinate systems to find locations on maps and to represent points and simple figures
D.4.1 Recognize and describe measurable attributes, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them
D.4.2 Demonstrate understanding of basic facts, principles, and techniques of measurement, including
- *Appropriate use of arbitrary and standard units (metric and US Customary)*
- *Judging the reasonableness of an obtained measurement as it relates to prior experience and familiar benchmarks*

D.4.3 Read and interpret measuring instruments

Social Studies
A.4.1 Use reference points, latitude and longitude, direction, size, shape, and scale to locate positions on various representations of the earth's surface

Physical Education
D.4.1 Experience the opportunity for enjoyment while participating in physical activity
D.8.1 Feel satisfaction when engaging in physical activity
D.8.2 Recognize the social benefits of participation in physical activity such as the joy of participating with a team and sensing team fulfillment
D.8.3 Enjoy learning new activities
D.12.1 Derive pleasure from participating in physical activities in competitive and recreational settings
F.4.1 Follow activity-specific rules, procedures, and etiquette with little or no reinforcement

Standards (by activity)
COURSE WORK
Math
A.4.1, A.4.3, A.8.1, A.12.1, B.4.5, C.4.3, C.4.4, D.4.1, D.4.2, D.4.3
Social Studies
A.4.1
Physical Education
D.4.1, D.8.1, D.8.2, D.8.3, D.12.1, F.4.1