Kids Don't Float
Cold Water Survival

Grade: 9th through 12th
Time Required: 45 – 60 minutes

Program Overview:
This curriculum is based on the primary risk factors in recreational boating in Alaska, laying a foundation of boating safety. The concepts are aligned with Alaska's education and early development standards, and designed for the physical and psychological developmental levels commonly reached at this age. Cold Water Survival teaches the physiological effects of cold water immersion, how to select and properly fit a life jacket, safe boating behaviors, and laws pertaining to life jacket use. Skill-based activities attach experiences to the safety concepts from this lesson. Our program's goal is to familiarize students with how to keep themselves safer when in and around Alaskan waters.

Instructor Note: The Alaska Office of Boating Safety tracks the number of participants in the *Kids Don't Float* program. Please contact the office after teaching this lesson. Thank you!
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Certain sections of the lesson appear in blue. These portions are directly related to concepts practiced during the pool session of this curriculum.

Goals:
- Participants understand the effects of cold water immersion, the life jacket law in Alaska, and the importance of wearing a life jacket.
- Participants try on at least one life jacket during the lesson.

Essential Questions:
- Why is it important to wear a life jacket?
- What is boating safety?

Objectives:
Participants will be able to:
- Name the first three stages of cold water immersion.
- Describe one survival technique for each stage of cold water immersion.
- State that everyone under the age of 13 is required by law to wear a U.S. Coast Guard approved life jacket in an open boat and on the deck of a boat or while being towed.
- Describe damage on a life jacket that would make it unserviceable.
- Demonstrate how to check the fit of a life jacket. [JH1]
- Locate the U.S. Coast Guard approval number on the label on a life jacket.

- State one reason why boating under the influence of drugs or alcohol is dangerous.
- List two factors in deciding whether to swim or not when in the water.

Alaska State Standards:

Physical Education Grades 9-12:

A.5 Demonstrate competent skills while participating in adventure/outdoor activities (e.g., Alaskan cultural physical activities, hunting, fishing, skiing, biking, hiking, wilderness survival, camping).

B.7 Explain to others the importance of strategies and safety procedures for success while participating in physical activity (e.g., weightlifting, wearing a helmet while snowboarding).

E.1 Demonstrate leadership by holding self and others responsible for following safe practices, rules, procedures, and etiquette in all physical activity settings.

E.2 Demonstrate an understanding of responsible personal and social behaviors in physical activity settings.

Skills for a healthy life:

A.2. Understand how the human body is affected by behaviors related to eating habits, physical fitness, personal hygiene, harmful substances, safety, and environmental conditions.

A.3. Understand and identify the causes, preventions, and treatments for diseases, disorders, injuries, and addictions.

A.6. Use knowledge and skills related to physical fitness, consumer health, independent living, and career choices to contribute to well-being.

B.1 Demonstrate an ability to make responsible decisions by discriminating among risks and by identifying consequences.

D.2. Take responsible actions to create safe and healthy environments.

Vocabulary:

Cold Water Immersion: When the body is immersed in water colder than 70°F.

Body Core Temperature: The temperature deep inside the body, as opposed to that of the skin.

Cold Shock Response: Effects within the first three minutes, which may include gasping, hyperventilation, vertigo, and changes in blood pressure, heart rate and rhythm.

Cold Incapacitation: Effects within the first 30 minutes, when arms and legs begin to lose sensation and function (may become numb and muscles become weaker).

Immersion Hypothermia: Effects begin after 30 minutes or more, when body core temperature begins to drop

Serviceable Condition: A life jacket that is free of rips and holes, the flotation material is not damaged, and all straps, buckles and zippers work.

Vasoconstriction: The narrowing of blood vessels.

Vasodilation: The widening of blood vessels.

Materials Needed:

- Cold Water Survivors video available online at: https://vimeo.com/98757977
- *Kids Don't Float* teaching kit, (off-shore, near-shore, buoyancy aid life jackets)
- *Kids Don't Float* Cold Water Survival Quiz Online: www.AlaskaBoatingSafety.org
- *Kids Don't Float* Evaluation. Online: www.AlaskaBoatingSafety.org

Introduction (20 minutes):

Ask participants: Why is it important to learn about boating safety?

Introduce the video **Cold Water Survivors** (12 minutes)
The movie details a boating accident on Tustumena Lake in 2011, narrated by two local teenage girls.*

** Let participants know that this is about a boating accident where people died. Although the focused message is positive, unfortunately in Alaska boating fatalities do happen and touch the lives of many people. If they are uncomfortable at any time they may step out of the room and talk to a teacher or supervising adult*.

Ask participants: What are some ways that people can stay safe around water?

Why should participants learn about boating safety?

-Five of six boating fatalities in Alaska are due to swamping, capsizing, or falling overboard. In these accidents there is little or no time to put on a life jacket.

-The drowning rate for children and teenagers in Alaska is almost two and a half times the national average (includes boating and non-boating fatalities).

Cold Water Immersion (15 minutes):

The video mentions the first three stages of cold water immersion. Ask participants if they can recall the first thing that happens when a person falls into cold water.

Cold Shock Response: Ask participants if anyone has accidently fallen into cold water. If yes, ask them to describe how it affected their breathing. When a person first falls into cold water, he or she may gasp, hyperventilate, experience a change in heart rate, rhythm, blood pressure and/or vertigo.

How to react:

i. Within the first three minutes, wait for the effects of cold shock to subside.
ii. If a participant is a rescuer, encourage victim to slow and calm breathing and focus on self control and staying positive.

*[JH2] If not wearing a life jacket, there is a higher risk of drowning.

Cold Incapacitation: The second stage of cold water immersion is Cold Incapacitation. Within the first ten minutes, a person will experience localized cooling in the arms and legs, and the cold will affect muscles and nerves, causing loss of sensation (numbing) and function (dexterity). This is due to *vasoconstriction*, or the constriction of blood vessels, which reduces blood flow to arms and legs. Consuming alcohol causes blood vessels to expand (*vasodilation*), which allows more body heat to escape and impairs the body's natural responses to immersion in cold water. Consuming alcohol also impairs judgment, balance and reaction time, further aggravating the effects of cold water immersion. In a similar way, drugs can affect the body in ways that make survival more difficult.

How to react: Prioritize and perform the most important survival functions first. As Miranda says in *Cold Water Survivors*, "You just have to think about yourself and people around you and what you are going to do to get yourself safe again."

i. Tighten the life jacket. Life jacket fit changes when clothes and life jacket become wet.
ii. Get help. Blow a whistle, wave both arms, yell for help, or use an emergency communication or distress signaling device.
iii. Try to get out of the water. Grab onto something nearby and get out of the water as much as possible. This may mean swimming to shore.

iv. Assess the situation and make a plan. If in open water, decide whether or not to swim to shore or stay with the boat.

When to swim	When not to swim
-If you are wearing a life jacket -If your boat sinks -If you are physically able and uninjured -If the accident was not witnessed by others -If you are in an area of low boat traffic -If the water is calm and you are within 800 yards of shore -If you think you can make it to the shore -When you have no ability to call for help using communication or signaling devices	-If you are not wearing a life jacket -If your boat is still afloat and can be used to get out of the water -If you are with someone who is injured -If there are people who witnessed the accident -If the water is rough and the shore is farther than 800 yards away -If you do not believe you can make it to shore

If participant is a rescuer, remember that victims may not be able to effectively use their fine motor skills. Encourage victims to use larger muscle groups, such as hugging arms around a throwable Personal Flotation Device.

*[JH3]If not wearing a life jacket, there is a higher risk of drowning.

Immersion Hypothermia: The third stage of cold water immersion is Immersion Hypothermia. Normal body temperature is approximately 98.6° Fahrenheit. Hypothermia is when a person's core body temperature drops. Emphasize that it is possible to survive being hypothermic. Hannah and Miranda Udelhoven in the video "Cold Water Survivors" were in the cold water for four and a half hours and did not sustain lasting physical damage.

How to react:

1) Stay positive!
2) Continue plan developed in stage two
3) Be prepared to activate visual distress signals when potential rescuers are in range
4) Reduce heat loss by keeping movements to a minimum or get out of the water
5) In open water:
   a) If swimming, do so efficiently using a modified backstroke. This stroke helps protect high heat loss areas, armpits and inner thighs reducing body heat loss.
   b) Keep upper arms and elbows close to the sides of chest, upper legs close together and knees slightly bent.
   c) Move slowly and conserve energy.
   d) Use floating objects to help pull body out of the water or assist with swimming.
   e) If not swimming, get into the Heat Escape Lessening Position (HELP) or huddle position to reduce body heat loss. (The HELP position maybe useful, but is only possible if wearing a life jacket.)
   f) Keep elbows by sides, squeeze legs together, and tuck knees up while still maintaining position in the water to help trap some heat.

*Encourage students to try this in the water to help discover optimal position.

With other people, huddle together. This will help people stay warmer, stay together, and make it easier for rescuers to spot.

6) If in a river or other moving water:
   a) Point feet downstream with knees bent slightly and feet up to avoid foot entrapment.
   b) Maintain body at 45-degree angle to the current, with head pointing to the bank of choice.
   c) The force of the current on the upstream side will help "ferry" toward that bank.
   d) Use a modified backstroke and be prepared to fend off rocks and other objects.
   e) If necessary, be prepared to quickly flip onto stomach and into head-first position to scramble over "strainers" or other obstacles to keep from being pulled under or becoming pinned against them by the current.

1[JH4]**-10-1 principle:** (Remember this is a general guideline. Timeframe varies for each individual depending on many factors.)

a. Within one minute, wait for the effects of cold shock to subside.
b. Within 10 minutes prioritize and perform meaningful activity.
c. Within one hour (or more), focus on self-rescue before possible loss of consciousness.

*** Wear a life jacket, stay positive, and think about 1-10-1.*

Optional Activity: Chill Out Relay (See Appendix A)

Alcohol and Boating

Ask participants if they know what percentage of boating fatalities in Alaska involve alcohol.

-Twenty-eight percent of Alaska's boating fatalities involve alcohol. The effects of alcohol impair:

* *Judgment* - operators under the influence are more likely to take unnecessary risks and make bad decisions.

* *Reaction Time*- In an emergency, sharp reflexes and quick action can save the day. Alcohol dulls reflexes and slows reaction time.

* *Vision* - Alcohol can seriously affect an operator's peripheral vision, night vision, and ability to focus.

* *Balance* - Most alcohol-related boating deaths involve someone's falling overboard into cold water.

In Alaska, the laws that define driving while intoxicated, and the penalties for a conviction, apply to boat operators too. (This includes paddling with a .08% blood alcohol content or a behavior that meets a certain standard.)

Alaska Life Jacket Law (Five minutes):

Ask participants if they know who has to wear a life jacket according to the law.

EVERYONE UNDER THE AGE OF 13 IS **REQUIRED TO WEAR** A U.S. COAST GUARD APPROVED LIFE JACKET WHEN IN AN OPEN BOAT OR ON THE DECK OF A BOAT OR WHEN BEING TOWED (TUBING, WATERSKIING ETC.).

However, everyone — even excellent swimmers and experienced boaters — should always wear a life jacket especially in an open boat. Life jackets are the single most important factor for survival in cold water.

1. They help maintain an airway
2. Some can slow heat loss
3. They can extend survival time
4. They can make it easier for you to save yourself

<u>How to inspect and fit a life jacket</u>

1. Read the label on the life jacket. Make sure it is U.S. Coast Guard approved, the proper size for participants, and made for the intended activity.
2. Life jackets must be in "serviceable condition."
    a. Make sure there are no rips or holes and that flotation material is not squished or showing.
    b. Check that straps, buckles, and zippers all work.
3. Fasten all straps, buckles, and zippers.
4. Adjust for a snug, comfortable fit. To check, pull up on shoulder straps to see if straps rise above the ears. If so, tighten straps for a more snug fit.

<u>Off-Shore Life Jacket (Type I)</u>[JH5]

How to identify:
A. Locate the U.S. Coast Guard approval number
B. Read the label for specific instructions and intended use. Off-shore life jackets are not appropriate for impact activities such as water skiing, personal watercrafts, and towing sports such as tubing

C. Bright orange color, with highly visible reflective tape

Function:

A. Turns most unconscious wearers face-up in water
B. Recommended for use in rough, open or remote waters
C. Normally has the most flotation material which means it floats the wearer highest in the water

Near- Shore Life Jacket (Type II)

How to identify:

A. Locate the U.S. Coast Guard approval number
B. Read the label for specific instructions and intended use. Not appropriate for impact activities (water skiing, tow sports e.g., tubing, or
personal watercraft)
C. Bright orange or other bright colors

Function:

A. Intended for calm, inland waters, areas where there is a good chance of quick rescue
B. Turns some unconscious wearers face up in the water.

Buoyancy- Aids, Vests, Float Coats (Type III)

How to identify:

A. Locate the U.S. Coast Guard approval number
B. Read the label for specific instructions and intended use. Some styles are not designed for impact activities or tow-sports

Function:

A. Not guaranteed to turn a wearer face-up in water
B. Wide range of sizes and colors available
C. Most are very comfortable

Optional Activity: Sell Your Life Jacket (See Appendix B)

The best life jacket is the one you wear.

Assessment Plan:

Skill check: participants are able to:

- Explain the first three stages of cold water immersion and important survival strategies associated with each stage
- Identify a serviceable life jacket
- Check life jackets for proper fit
- Choose a life jacket that is suitable for various activities
- Identify physical effects of consuming drugs and alcohol and explain why they are dangerous when boating

Prompts to check for understanding:

- Describe the first three stages of cold water immersion and explain why a life jacket is important in each stage
- What are some factors participants should consider when deciding whether or not to swim to shore?
- What are some ways that consuming drugs or alcohol affects one's ability to operate a boat or survive in cold water?
- Who must wear a U.S. Coast Guard approved life jacket in an open boat or on the deck of a boat?
- Who *should* wear a life jacket?
- How does one know if a life jacket is U.S. Coast Guard approved?
- What does boating safety mean?

Complete an instructor evaluation and give students the Cold Water Survival Quiz.

Chill Out Relay

Purpose: To demonstrate the physical effects of cold water on the body, loss of fine motor skills, and numbness in fingers.

Materials:
- A bucket or a clean container
- One bag of ice or enough ice/snow to fill the container
- Hand towel or paper towels for drying hands
- Life jackets (2-3)

Objectives:
Experience what cold water feels like in a safe, controlled environment.
Experience how cold water affects dexterity.

Alaska State Standards:
Skills for a Healthy Life:
A.2. Understand how the human body is affected by behaviors related to eating habits, physical fitness, personal hygiene, harmful substances, safety, and environmental conditions;
A.3. Understand and identify the causes, preventions, and treatments for diseases, disorders, injuries, and addictions. A.6. Use knowledge and skills related to physical fitness, consumer health, independent living, and career choices to contribute to well-being.

WARNING: Some people have certain health risks related to this activity; ask participants if anyone has a health condition related to cold prior to beginning this activity. Please do not make this a mandatory activity. Monitor length of time in the water and excuse those who demonstrate discomfort.

Discussion points:

1. **What is the first reaction when a person's arm enters the water?**

   Cold shock Response. The gasp may not be as pronounced because it is just part of the body instead of complete immersion.

2. **How does the person's arm feel after a few seconds of being in the water?**

3. **Would it be difficult to buckle buckles, zip zippers, or pull straps on the life jacket when in cold water?**

   YES! During the second stage of cold water immersion, blood flow is restricted as blood vessels constrict causing loss of feeling and dexterity.

4. **Was anyone wearing a sweatshirt or jacket when putting on the life jacket? Did that make it harder to get the life jacket snug?**

   It is common to wear warm clothes when boating in Alaska, so it is important to make sure that the life jacket fits over all of the layers that someone is wearing.

The best life jacket is the one you wear!

Procedure:
1. Divide participants into 2-3 teams, and place the bucket at one end of the room with teams behind it.
2. Put ice in bucket and fill ¾ full with cold water. Have the first participants from each team put their hands in the ice water.
3. Have the participants run to the lifejackets (about 30 feet away), put on a life jacket and fasten the buckles.
4. The participant in line after them will now submerse their hands in the bucket.
5. The first participant will put on and take off the life jacket.
6. Once the first participant has returned to the ice bucket, he/she tags the second participant.
7. The relay continues until all of the participants have tried putting the life jackets on.

Sell Your Life Jacket

Purpose: To encourage students to participate in educating others on the benefits of wearing a life jacket and the different features and designs that contribute to safety and comfort for various activities.

Objectives:
Properly fit a life jacket.
Choose the appropriate type of life jacket for the desired activity.

Materials:
• Various styles of off-shore and near-shore life jackets

Alaska State Standards:

Skills for a Healthy Life:

A.6. Use knowledge and skills related to physical fitness, consumer health, independent living, and career choices to contribute to well-being.

B.1 Demonstrate an ability to make responsible decisions by discriminating among risks and by identifying consequences.

Procedure: (15 minute activity)
1. Split participants into small groups and give each group a life jacket.
2. Instruct them on how to read the label to find desired information (i.e. U.S. Coast Guard approved, intended use, size).
3. After five minutes of discussion, each group should try to sell their life jackets to the class by highlighting different qualities.
4. Make sure that students are also highlighting the safety features of each life jacket as well as the more "flashy" aspects

Discussion Questions:
With so many options of life jackets, is it possible for everyone to find one that is comfortable and keeps them safe?

What are some features you would look for in a life jacket? Why?

What is the best life jacket?
The best life jacket is the one you wear!
Remember, Alaska Law requires children under 13 to wear a U.S. Coast Guard approved life jacket when in an open boat or on the deck of a boat.

[JH6]

Life Jacket Relay Race

Purpose: For students to experience the difficulty in putting on a life jacket in a hurry, wearing a life jacket before an emergency arises ensures a greater chance of survival.

Alaska State Standards:

Skills for a Healthy Life:

A.1. Understand that a person's well-being is the integration of health knowledge, attitudes, and behaviors.

B.5. Evaluate what is viewed, read, and heard for its effect on personal well-being.

D.2. Take responsible actions to create safe and healthy environments.

Materials:

- Several different size life jackets.
- A hallway, gym, or classroom space.

Objectives:

Properly fit a life jacket

Experience putting on a life jacket while in a hurry

Procedure: (ten minute activity)

1. Divide the participants into two equal teams.
2. Participants should then form two lines at one end of the classroom, hallway, or gym.
3. Place life jackets in a pile at the other end of the classroom, hallway, or gym.
4. To start, the first person in each line will run to the pile of life jackets, pick up one that is the right size, put it on, and then check it for fit.
5. The instructor will let each participant know if he/she has correctly fit the life jacket.
6. He/she will then remove the life jacket, and set it back down on the pile of life jackets.
7. The participant will then run back to his/her team and tag the next person in line.
8. The race is over when the first team to have each person complete the exercise is finished.

Discussion Question:

How difficult is it to put on a life jacket AND make sure it fits when in a hurry?

It is always best to have the life jacket on to start with than having to put it on in an emergency, especially if the life jacket is stored. Remember, Alaska Law requires children under 13 to wear a U.S. Coast Guard approved life jacket when in an open boat or on the deck of a boat.

Kids Don't Float
Cold Water Survival
Quiz

Please circle the best answer:

1. What is an example of a safe behavior when boating?
    a. Reaching overboard for an object
    b. Riding on the bow of the boat
    c. Seating everyone on the same side
    d. Sitting and keeping the boat balanced

2. During the first stage of cold water immersion (Cold Shock Response), how does a life jacket help you survive?
    a. Helps maintain an airway
    b. Deploys a mayday call upon initial immersion
    c. Reduces tingling in your fingers and toes
    d. Slows the heat loss from your head

3. What is one thing you should do within the first ten minutes of cold water immersion?
    a. Assess the situation and make a plan
    b. File a float plan
    c. Kick off boots and shed bulky clothing
    d. Divide the group and swim in different directions

4. What is the term used to describe a drop in a person's body core temperature?
    a. Gasp reflex
    b. Cold incapacitation
    c. Frostbite
    d. Hypothermia

5. What is one thing that would make a life jacket non-serviceable?
    a. It is an ugly color
    b. Broken buckle
    c. It's too small
    d. It has a zipper

6. Alaska law requires that a person under what age must wear a U.S. Coast Guard approved life jacket when in an open boat or on the deck of a boat?
    a. 11
    b. 12
    c. 13
    d. 14

7. How do you know if a life jacket is U.S. Coast Guard approved?
    a. Is bright orange and has reflective tape
    b. Has an approval number on the label
    c. Fits properly in the water
    d. Floats a person on his/her back

8. How can you test to ensure a life jacket properly fits?
    a. Bend over and touch your toes
    b. Fill the pockets with survival gear
    c. Read the label
    d. Is snug and comfortable

9. You are going waterskiing, which life jacket would you choose?

a.

b.

c.

d.

10. What is the best life jacket?
    a. One you wear
    b. Most expensive one
    c. Your favorite color
    d. Newest one

11. What was the most important thing you learned today?

12. Will you wear a life jacket in an open boat or on the deck of a boat?

KIDS DON'T FLOAT

Cold Water Survival
Course & Instructor Evaluation

Your Name:	**Date of class:**
School:	**Grade:**
# of Students:	**Instructor's Name:**

Did you find the presentation to be: **If 'no' to any, please describe why not**

Informative? →
Useful? →
Active? →
Fun? →

Did you find the length and content of the presentation to be age appropriate? If not, why?

What was the *most* useful piece of information provided?

Did the instructor cover all of the learning objectives?

__ Distinguish between risky and safe behavior while on or near the water
__ Describe three stages of cold water immersion
__ Explain 1-10-1 and how to survive a cold water immersion event
__ Describe how to choose a life jacket for its intended use
__ Locate manufacturers label on a life jacket; is life jacket U.S. Coast Guard approved?
__ Explain life jacket serviceability
__ Demonstrate how to wear a life jacket properly and how to check for proper fit
__ Identify legal age requirement for life jacket use

On a scale of 1 to 5 (1 = poor, 5 = excellent), please rate the instructor.

__ Was instructor on time and prepared?
__ Was instructor dressed professionally?
__ Was the material presented in an understandable manner?
__ Did the instructor demonstrate a thorough knowledge of the subject?
__ Was student participation encouraged?

What were the instructor's strong points?

Are there any topics that you would like to see that were NOT covered?

Any other comments or suggestions for the instructor or the program?

Please submit completed form to kelli.toth@alaska.gov or fax to 907269-8907.

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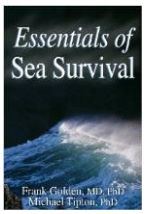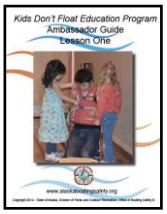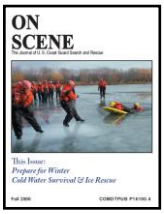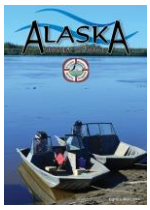
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