Into the Outdoors

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ADVANCED BOATING TECHNOLOGY AND SAFETY

6th-8th Grade Discussion Guide

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SCIENCE CATEGORIES
Life Science

TIMEFRAME
Three to five lessons

KEYWORDS
Flotation Device (PFDs), Vessel, PLD, EPIRB, VHF Radio, ECOS

LEARNING OBJECTIVES

- Describe what boating technology is required and suggested for boats.

- Explain how this technology keeps boaters safe.

ACTIVITY SUMMARY

In this series of activities, students will explore how they can use advanced technology to stay safe when boating. During the introductory activity students will engage in an active game of "talking timebomb" where they respond to the instructor's question and then pass the ball to another student while music plays. If the music stops when the ball is in a student's hand, they are out.

In the next activity students will engage in small group text rendering by reading an expository text on PFDs and choosing another genre in which to capture the key details of the text. They will then switch their text with another group to get feedback; engaging in peer revision.

Individually students will choose one advanced technology to research and compose a trifold with step-by-step directions on how to use the technology of their choice. They will also engage in peer revision based on their peer's ability to follow along with the trifold. Finally, students will summarize their understanding of the material by engaging in the Wise Words activity.

BACKGROUND INFORMATION

This segment speaks to the rules, regulations, equipment and safety tips involved in boating safety. Having the right gear, and knowing how and when to use it, is also important to boating safety. PFDs are one of the most important examples of important gear.

Some helpful technology includes a PLD (Personal Locator Device) which signals for help with the push of a button. Similarly an EPIRB (Emergency Position Indicating Radio Beacon) sends an emergency signal if your boat were to sink. Another tool is the VHF radio (Very High Frequency) which can be used to contact the US Coastguard. Visual signals such as flares and flags can also be helpful. If you are unsure of what you need, download the US Coastguard app on your smartphone and it will guide you to all the safety requirements.

VOCABULARY

Vessel: any type of watercraft used or capable of being used as a means of transportation on water.
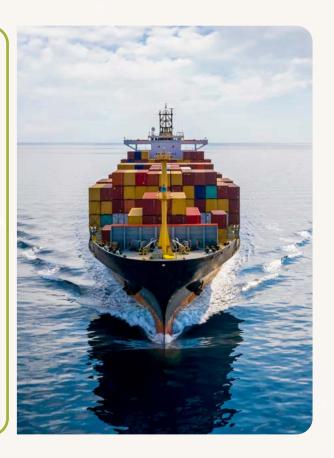
PFD: (Personal Flotation Device) a life preserver, life jacket, or other device for keeping a person afloat in the water.

PLD: (Personal Locator Device) signals for help with the push of a button.

EPIRB: (Emergency Position Indicating Radio Beacon) sends an emergency signal if your boat were to sink.

VHF Radio: (Very High Frequency) radio which can be used to contact the US Coastguard.

ECOS: (Engine Cut Off Switch) which stops the engine if you go overboard.

LEARNING PROCEDURE

The instructor poses the question: "How can we use technology to keep us safe out on the water?"

Talking Timebomb

After posing the above question, the instructor hands a ball to a student. Next, the teacher starts the music, and students have to state a response to the above question. When they come up with a response, they pass the ball to another student. This process continues but students can't repeat something that has already been said. When the music stops, whoever is holding the ball is out. The instructor may continue with the same question above, or other questions related to the video clip, for as long as they deem appropriate.

ACTIVITY 1:

Instruct students to read statistics on How PFDs Save Lives individually. Students may interact with the text using any method the instructor has taught and/or students prefer.

In small groups, students will take the information they have learned and transform it into another genre of text. The instructor may want to solicit genre options from students; some examples include: song lyrics, newspaper articles, fiction stories, comic books or play scripts.

It is important that the instructor provides some parameters or rubric for what type and quantity of information shows up in the genre exploration.

Students will present and offer feedback to their peers on how well they captured and translated the information from the expository text. Some questions an instructor may pose as scaffolding for feedback include:

What, from the original text, came through clearly in the translation?

What, from the original text, was lost or missing in translation?

ACTIVITY 2:

Tell students to choose one of the advanced boating safety technologies from a list provided. Students will then more deeply research the technology (some links provided in related research) they have chosen and write a trifold handbook on how to use the technology. The trifold should include images with step-by-step instructions.

Once students have finished their trifold handbooks, they should exchange with a partner. The partner should offer feedback on if they feel they could operate the technology based on the description that was provided.

Then students should have the opportunity to revise their handbooks based on peer's suggestions.

CONCLUSION

Instructor states, "Make sure you have these items before you head out on your next boating adventure!"

Wise Words

Have students write 1-2 pieces of advice they would give to someone who is just learning about boating safety for the first time. Ask students to share out loud. Many times their wise words are something another student needs to hear.

EXTENDING THE LESSON

- Write a text message dialogue relevant to the topic.

- Graffiti/Tattoo: You are in charge of developing a graffiti design or tattoo art to allow the world to know about one of the assigned science topics. 1. The centerpiece of the design must be a slogan representing the concept. 2. The surrounding artwork must demonstrate the concept in a real-life situation. 3. The artwork must be suitable for all ages and appropriate for viewing in all social situations. 4. Write a paragraph explaining how the artwork represents the concept.

- Write a series of tweets relevant to the topic.

- Create an Internet scavenger hunt.

- Make a paper chain with a different fact for each link.

RELATED LINKS

- Public boating courses people could take: https://wow.uscgaux.info/peclass.php?unit=054-09

- USCG Float Plan: https://floatplancentral.cgaux.org/download/USCGFloatPlan.pdf

- Required gear for different watercrafts: https://www.usps.org/national/vsc/conductvsc_files/USCGMinReq_2012.pdf

- USCG Vessel Checklist: https://www.usps.org/national/vsc/formtool_files/a7012.pdf

- Request to have your boat inspected: http://cgaux.org/vsc/

- Statistics on how PFDs save lives https://www.ul.com/news/statistics-show-personal-flotation-devices-help-save-lives

- What is an EPIRB: https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/CG-5PC/CG-CVC/CVC3/notice/flyers/11E-EPIRBs.pdf

- What is a VHF Radio: https://portal.ct.gov/DEEP/Boating/Safety/Marine-VHF-Radio--The-Basics

The following National Common Core Standards can be met teaching;

ADVANCE BOATING TECHNOLOGY AND SAFETY

6TH GRADE

CCSS.ELA-LITERACY.RI.6.1   Cite textual evidence to support analysis of what the text says explicitly as well asinferences drawn from the text.

CCSS.ELA-LITERACY.RI.6.2   Determine a central idea of a text and how it is conveyed through particular details; providea summary of the text distinct from personal opinions or judgments.

CCSS.ELA-LITERACY.RI.6.7   Integrate information presented in different media or formats (e.g., visually, quantitatively)as well as in words to develop a coherent understanding of a topic or issue.

CCSS.ELA-LITERACY.W.6.2   Write informative/explanatory texts to examine a topic and convey ideas, concepts, andinformation through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.6.2.A   Introduce a topic; organize ideas, concepts, and information, using strategies such asdefinition, classification, comparison/contrast, and cause/effect; include formatting(e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aidingcomprehension.

CCSS.ELA-LITERACY.W.6.2.B   Develop the topic with relevant facts, definitions, concrete details, quotations, or otherinformation and examples.

CCSS.ELA-LITERACY.W.6.2.C   Use appropriate transitions to clarify the relationships among ideas and concepts.

CCSS.ELA-LITERACY.W.6.2.D   Use precise language and domain-specific vocabulary to inform about or explain thetopic.

CCSS.ELA-LITERACY.W.6.3   Write narratives to develop real or imagined experiences or events using effectivetechnique, relevant descriptive details, and well-structured event sequences.

CCSS.ELA-LITERACY.W.6.4   Produce clear and coherent writing in which the development,organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.SL.6.1   Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.6.1.A   Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-LITERACY.SL.6.1.C   Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

CCSS.ELA-LITERACY.SL.6.1.D   Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

7TH GRADE

CCSS.ELA-LITERACY.RI.7.1   Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.7.2   Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

CCSS.ELA-LITERACY.W.7.2   Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.7.2.A   Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.7.2.B   Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.7.2.C   Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.

CCSS.ELA-LITERACY.W.7.2.D   Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.7.2.E   Establish and maintain a formal style.

CCSS.ELA-LITERACY.W.7.2.F   Provide a concluding statement or section that follows from and supports the information or explanation presented.

CCSS.ELA-LITERACY.W.7.3   Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

CCSS.ELA-LITERACY.W.7.4   Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.SL.7.1   Engage effectively in a range of collaborative discussions (one- on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.7.1.A   Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-LITERACY.SL.7.1.C   Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.

CCSS.ELA-LITERACY.SL.7.1.D   Acknowledge new information expressed by others and, when warranted, modify their own views.

8TH GRADE

CCSS.ELA-LITERACY.RI.8.1	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
CCSS.ELA-LITERACY.RI.8.2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
CCSS.ELA-LITERACY.W.8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
CCSS.ELA-LITERACY.W.8.2.A	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
CCSS.ELA-LITERACY.W.8.2.B	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
CCSS.ELA-LITERACY.W.8.2.C	Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
CCSS.ELA-LITERACY.W.8.2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.
CCSS.ELA-LITERACY.W.8.2.E	Establish and maintain a formal style.
CCSS.ELA-LITERACY.W.8.2.F	Provide a concluding statement or section that follows from and supports the information or explanation presented.
CCSS.ELA-LITERACY.W.8.3	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
CCSS.ELA-LITERACY.W.8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
CCSS.ELA-LITERACY.SL.8.1	Engage effectively in a range of collaborative discussions (one- on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
CCSS.ELA-LITERACY.SL.8.1.A	Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
CCSS.ELA-LITERACY.SL.8.1.C	Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
CCSS.ELA-LITERACY.SL.8.1.D	Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

9-10TH GRADES

CCSS.ELA-LITERACY.RI.9-10.1   Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.9-10.2   Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

CCSS.ELA-LITERACY.W.9-10.2   Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

CCSS.ELA-LITERACY.W.9-10.2.A   Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.9-10.2.B   Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audiences knowledge of the topic.

CCSS.ELA-LITERACY.W.9-10.2.C   Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

CCSS.ELA-LITERACY.W.9-10.2.D   Use precise language and domain-specific vocabulary to manage the complexity of the topic.

CCSS.ELA-LITERACY.W.9-10.2.E   Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

CCSS.ELA-LITERACY.W.9-10.2.F   Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

CCSS.ELA-LITERACY.W.9-10.3   Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

CCSS.ELA-LITERACY.W.9-10.4   Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.SL.9-10.1   Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-LITERACY.SL.9-10.1.A   Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

CCSS.ELA-LITERACY.SL.9-10.1.C   Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.

CCSS.ELA-LITERACY.SL.9-10.1.D   Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.

11-12TH GRADES

CCSS.ELA-LITERACY.RI.11-12.1   Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

CCSS.ELA-LITERACY.RI.11-12.2   Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.

CCSS.ELA-LITERACY.W.11-12.2   Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

CCSS.ELA-LITERACY.W.11-12.2.A   Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.11-12.2.B   Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

CCSS.ELA-LITERACY.W.11-12.2.C   Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

CCSS.ELA-LITERACY.W.11-12.2.D   Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.

CCSS.ELA-LITERACY.W.11-12.2.E   Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

CCSS.ELA-LITERACY.W.11-12.2.F   Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

CCSS.ELA-LITERACY.W.11-12.3   Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

CCSS.ELA-LITERACY.W.11-12.4   Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.SL.11-12.1   Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-LITERACY.SL.11-12.1.A   Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

CCSS.ELA-LITERACY.SL.11-12.1.C   Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

CCSS.ELA-LITERACY.SL.11-12.1.D   Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.