

Using American National Standards to Design and Deliver On-Water, Skills-Based Instruction for Safer Boating

Technical Support Document
for the *Instructional Approach Standard*

Embrace the Standards

Begin the Journey

Make it Real

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Abstract

This Technical Support Document has been developed to assist education providers, course developers, instructors, students, operator evaluators and operators in using the *American National Standards (ANSs)* for entry-level recreational power, sail, and human-propelled boat operation skills instruction and assessment.

The information contained in this document enhances understanding and guides the application of ANSs in the design and implementation of instructional programs, courses, and curriculum for entry-level recreational boat operation. The standards have been developed and agreed to by recreational boating experts from around the United States and validated through national surveys and field-testing programs. The objective is to help raise, on a national level, the overall quality and availability of skills-based instruction for entry-level recreational boat operation, with the primary goal being an increase in the level of safety and enjoyment boaters experience on the nation's waterways.

Disclaimer

The content of this Technical Support Document (TSD) is advisory only. Its use is entirely voluntary. It represents, as of the date of publication, current understanding of best practices associated with educational programming designed to incorporate content of the American National Standards for on-water, skills-based instruction in entry-level recreational boat operation.

The National On-Water Standards (NOWS) Program, its subject matter experts and organizations involved in the development of this TSD assume no responsibility whatsoever for the use of, or failure to use the American National Standards for On-Water Instruction, this TSD, instructional materials promulgated by them, their adaptation to any instructional program, or any consequences flowing therefrom.

Users of this TSD are responsible for protecting themselves against liability associated with application of its content.

This TSD is a guide to achieving specific instructional approach characteristics or student skills in recreational boat operation identified within *On-Water Recreational Boating Standards* and is not intended to preclude attainment of desired results by other means.

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Introduction

This Technical Support Document (TSD) provides information that complements the American National Standard (ANS) titled *On-Water Recreational Boating Skills Standard – Instructional Approach (EDU-4 On-Water Instruction Standard)*, also known as the Instructional Approach Standard (IAS).¹ The IAS was published by the American National Standards Institute (ANSI) and went into effect on January 25, 2018.

This IAS TSD is designed to be the first document education providers read as they learn about and use standards for on-water instruction in entry-level recreational boat operation. It targets the IAS as the starting place for developing new, or updating existing, on-water skills-based instruction courses or programs to follow the skills-based standards.

This TSD includes information that helps ensure the instructional approach considers key factors associated with high-quality instruction. It also identifies the specific skills to include to enable conformity with the standards. The intent is to help educators (course developers, instructors, trainers) design and deliver high-quality education and training in entry-level skills for recreational boat operation.

The IAS and this TSD are intended to be used in conjunction with the applicable domain-specific, skills-based ANS and its corresponding TSD. See Figure 1 to understand the relationship of the four ANSs and their TSDs.

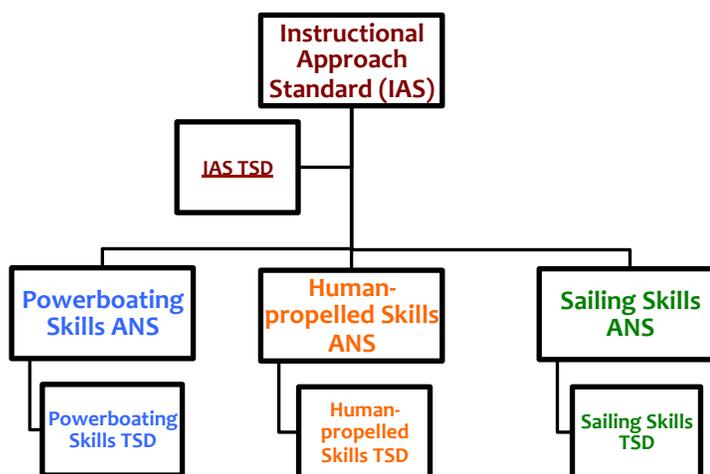


Figure 1: Relationship of On-Water, Skills-based American National Standards for Safer Boating

¹ The title of the standard is *On-Water Recreational Boating Skills Standard – Instruction*, however ABYC has titled the ANS as *EDU-4 On-Water Instruction Standard* to fit within its categorization system. Both titles are synonymous and may be used interchangeably in this document. Additionally, the phrase “Instructional Approach Standard” and its abbreviation “IAS” may be used throughout this document to refer to either title.

Note: The IAS and this TSD are designed to be the first documents education providers read as they learn about and use standards for on-water instruction in entry-level recreational boat operation. The IAS is the starting place for developing new, or updating existing, on-water skills-based instruction courses or programs to follow the skills-based standards. It is recommended that the IAS and its TSD be reviewed prior to and in concert with the applicable domain-specific skills-based ANS.

Reader Navigation

This TSD is organized as follows:

Introduction (this section).

Chapter 1: *Embrace the Standard* - Provides a brief history of the ANS and places it in the context of a national system of standards for recreational boat operation. Read this chapter to understand what the ANS is, why it was developed, and the process used to develop and validate it.

Chapter 2: *Begin the Journey* - Provides information on how to use the ANS to design, develop and implement courses, curricula, syllabi, and lesson plans. Read this chapter to understand ways in which instructional programs may be designed and implemented using the ANS.

Chapter 3: *Make it Real* - Provides detailed information about the elements of the ANS to help apply it to instructional programing. Read this chapter to developed a more detailed understanding of each element within the ANS.

Appendices

- A. *Instructional Approach Standard*
- B. *Powerboating Skills ANS*
- C. *Human-propelled Skills ANS*
- D. *Sailing Skills ANS*
- E. Integrating TSD Information within Education Provider Materials
- F. Additional Resources *
- G. Glossary

* Note: This TSD is intended to be a resource that provides important information about the on-water skills standards, why and how they were developed, and how to use the IAS to design and deliver instructional programs. ***This TSD is not meant to be a substitute for a textbook on instructional design.*** For those without training or experience in instructional design, please consider the resources provided in the appendices.

Chapter 1. Embrace the Standards

Embrace - *verb* - em·brace \im-'brās\ - to take up especially readily or gladly.

All are encouraged to **embrace** the standards as their own and use them to the maximum possible benefit. If more educators use the standards, then our waterways can be safer and more fun for all boaters.

What are American National Standards?

Standards are documents established to provide rules, guidelines or characteristics for products, services, activities in which people engage, or the results produced by those activities. They provide a common frame of reference for standardizing the work of many different people in order to create a baseline level of consistency and quality.

American National Standards are voluntary consensus standards that have been developed using the *Essential Requirements*² of the American National Standards Institute (ANSI). “ANSI facilitates the development of American National Standards (ANSs) by accrediting the procedures of Standards Development Organizations (SDOs). These groups work cooperatively to develop voluntary national consensus standards. Accreditation by ANSI signifies that the procedures used by the standards body in connection with the development of American National Standards meet the Institute’s essential requirements for openness, balance, consensus and due process.”³

“In order to maintain ANSI accreditation, standards developers are required to consistently adhere to a set of requirements or procedures known as the “ANSI Essential Requirements” that govern the consensus development process. Due process is the key to ensuring that ANSs are developed in an environment that is equitable, accessible and responsive to the requirements of various stakeholders. The open and fair ANS process ensures that all interested and affected parties have an opportunity to participate in a standard’s development. It also serves and protects the public interest since standards developers accredited by ANSI must meet the Institute’s requirements for openness, balance, consensus and other due process safeguards.”⁴

“That is why American National Standards are usually referred to as “open” standards. In this sense, ‘open’ refers to a process used by a recognized body for developing and approving a standard. The Institute’s definition of openness has many elements, but basically refers to a collaborative, non-dominant, balanced and consensus-based approval process. The content of these standards may relate to products, processes, services, systems or personnel.”⁵

Why were recreational boating skills standards developed?

The mission of the National Recreational Boating Safety (RBS) Program of the United States Coast Guard (USCG) is to ensure the public has a safe, secure, and enjoyable recreational boating experience by implementing programs that minimize the loss of life, personal injury, and property damage while cooperating with environmental and national security efforts.⁶

² <https://www.ansi.org/essentialrequirements/>

³ ANSI website: https://www.ansi.org/about_ansi/introduction/introduction?menuid=1

⁴ Ibid.

⁵ Ibid.

⁶ Source: A Report on the Strategic Plan of the National Recreational Boating Safety Program 2012-1016;
<http://uscgboating.org/content/strategic-plan.php>

For decades, the USCG has been collecting data on injuries, accidents and fatalities taking place during recreational boating on our nation's waterways to understand the impact of boating safety efforts. Recreational boating statistics report data consistently show top causes of accidents to be operator inattention, operator inexperience, improper lookout, machinery failure, excessive speed, and alcohol use. Navigation rule violations, hazardous waters, weather, and the force of waves and wakes are also frequently occurring contributing factors.

These statistics identify target areas to address to develop more proficient boat operators and further reduce the occurrence of avoidable injuries, accidents and fatalities. Accordingly, the National Boating Safety Advisory Council (NBSAC), which advises the USCG on matters of recreational boating safety, recommended a national strategy to broaden the approach used to educate boaters. The Council included Objective 3 in its 2012-2016 Strategic Plan titled *Advanced and/or On-Water, Skills-Based Boating Education*. Its aim was to "Increase the number of boaters who have completed advanced and/or on-water, skills-based boating education."⁷ *Advanced Education* was defined as a course of instruction that meets and exceeds the National Boating Education Standards as recognized by the USCG. *On-Water Education* was defined as **a course of instruction that is boat-based and on the water for skill development**, regardless of the level of the course content.⁸

In order to successfully accomplish this objective, it was necessary to create a significant increase in the availability, quality and consistency of on-water, skills-based instruction across the country.

Rather than requiring on-water instruction, the USCG chose to initiate a voluntary process by which experts in recreational boating instruction would reach consensus on best practices associated with on-water, skills-based instruction. These best practices would attain the status of American National Standards and be made freely available to education providers interested in developing and improving approaches to on-water, skills-based instruction within their boating safety and education programs.

What are the benefits of having American National Standards for recreational boating instruction?

Across the spectrum of recreational boating education, from a small seasonal program on a lakeshore, to the affiliates of a large national organization with year-round support, **education providers** will benefit from following the ANSs because they help to establish a structure upon which to base a successful non-profit program or for-profit business.

This structure can provide **education directors, school owners, program supervisors**, and other senior-level educators the ability to establish a consistently reliable and repeatable model for their program that will raise the overall quality of their offerings and enable satisfied customers and repeat business. Following the standards can proactively improve risk management practices. Education providers can also receive the benefits of marketing and promoting their programs as being compliant with the ANSs.

Course developers can use the standards to help reduce course development cycle time and remove guesswork associated with designing training programs and curriculum. Whether creating a new program or refreshing an existing one, course quality can be significantly improved using the ANSs.

⁷ *ibid*; page 21

⁸ *ibid*; page 21

Instructors and **trainers** will benefit from having course content available to them that has been designed using the ANSs. Their ability to deliver course material will be enhanced as they use research-based performance assessment/measurement rubrics to help assess the skills-based performance of students. They can also enhance the level of safety by teaching according to the ANSs for both what to deliver and how to deliver it.

Students and **operators** will be able to determine and better understand the fundamental set of entry-level skills they need to learn and practice to become safer on the water and gain more enjoyment from their boating experiences.

How do the different standards fit into a “system” and how were they developed?

Developing proficient entry-level recreational boat operators toward the goal of safer boating requires consideration of many different factors, including:

- Ensuring the ‘right’ **people** are involved including both instructors and students appropriate for the program.
- Using instructional **methods** to engage students in hands-on experience with practice and feedback that takes place while on a boat.
- Establishing an environment that encourages students and instructors to learn, grow and develop as they engage in a safe learning **context**.
- Having among the key players a clear and shared understanding of the learning **outcomes** targeted for the experience.

Making on-water, skills-based instruction most effective requires standards focused on this entire **system** of people, methods, context and outcomes. The skills-based ANSs represent best practices associated with the complete system. They were developed as a result of one of the largest collaboration initiatives in recreational boating history: The **National On-Water Standards (NOWS)** Program. Funded in part through the USCG’s non-profit grant program, the NOWS Program has included over 3,000 subject matter experts and recreational boaters from across the country in the process of developing and testing the standards.

The ANSs are voluntary⁹ consensus standards and were developed using the following comprehensive process:

- Engage a professional change management facilitator to design and manage an open, inclusive, and balanced process for developing and reaching **consensus** on the standards.
- Assemble a diverse core team of nearly 50 subject matter expert (SME) **volunteers** from across the recreational boating community to develop the initial content for the standards.
- Gather input on content of the standards from an additional 950 SMEs around the nation.
- Achieve consensus among the core SME team as to the fundamental skills individuals should be able to perform in order to be considered safe entry-level recreational boat operators, as well as the characteristics and qualities of the on-water instructional approach that should be used to develop those skills.
- Validate the standards by field-testing them at over 20 different venues around the country using actual boats operated by real people.
- Attain American National Standard status using a process led by the American Boat & Yacht Council (ABYC), which is an ANSI-accredited Standards Development Organization.

⁹ From ANSI OVERVIEW OF THE U.S. STANDARDIZATION SYSTEM: ‘Voluntary’ refers only to the manner in which the document was developed; it does not necessarily refer to whether compliance to the standard is optional or whether a government entity or market sector has endorsed the document for mandatory use.

The process resulted in the development, testing and consensus on 98 entry-level recreational skills and over 1,100 specific safety-related behaviors associated with entry-level recreational boat operation, across the three domains of Power, Human-propelled, and Sail. It also produced 14 characteristics and 42 criteria for developing and assessing the quality of an approach to on-water instruction designed to deliver those skills. Additionally, it resulted in assessment tools and resources education providers can use to help ensure the quality of on-water instruction.

What are ANSs for on-water, skills-based instruction?

The on-water, skills-based ANSs identify the fundamental characteristics and qualities of on-water instructional approaches designed for skills development. The ANSs and associated TSDs serve as primary sources of information that help raise the overall quality and availability of on-the-water, entry-level recreational boating education in order to further enhance the safety and enjoyment of the nation's recreational boaters.

Recreational boating educators (course designers, instructors, etc.) with extensive experience and expertise in on-water, skills-based instruction developed the ANSs. They were designed so that education providers with widely different levels of experience can use them to design and deliver their own on-water, skills-based recreational boating instructional courses and programs.

There are currently four ANSs that address on-water, skills-based instruction for safer boating. The *On-Water Recreational Boating Skills Standard – Instruction (EDU-4 On-Water Instruction Standard)*, also known as the Instructional Approach Standard (IAS)¹⁰ serves as the ‘umbrella’ ANS, which is applicable across the three recreational boating education domains of **Power**, **Human-propelled**, and **Sail**. The domain-specific skills ANSs are titled:

- *On-Water Recreational Boating Skills Standard – Power (EDU-1 On-Water Power Standards)*, also known as the **Powerboating Skills ANS**¹¹
- *On-Water Recreational Boating Skills Standard – Human-propelled (EDU-2 Skill-Based Human-Propelled Standard)*, also known as the **Human-propelled Skills ANS**
- *On-Water Recreational Boating Skills Standard – Sail (EDU-3 Skills-Based Sailboat Standard)*, also known as the **Sailing Skills ANS**.

The four ANSs are included in the appendices of this document.

The IAS identifies the core characteristics and criteria needed to consider when designing or updating an approach to on-water skills-based instruction. The other three ANSs identify fundamental skills that entry-level recreational boat operators should be able to demonstrate as a result of participating in an on-water instructional program.

¹⁰ The title of the standard is *On-Water Recreational Boating Skills Standard – Instruction*, however ABYC has titled the ANS as *EDU-4 On-Water Instruction Standard* to fit within its categorization system. Both titles are synonymous and may be used interchangeably in this document. Additionally, the phrase “Instructional Approach Standard” and its abbreviation “IAS” may be used throughout this document to refer to either title.

¹¹ The parenthetical titles (EDU-1..., EDU-2..., and EDU-3...) of the domain-specific skills standards refer to the ABYC titles, which are used to fit within its categorization system. The respective titles are synonymous and may be used interchangeably. Additionally, the abbreviations “Power Skills ANS,” “Human-propelled Skills ANS,” and “Sailing Skills ANS” may be used.

Is it mandatory to use the IAS and the other ANSs?

The ANSs were created voluntarily and by consensus of recreational boating experts from across the country. As a result, they represent the foundation of best practices in on-water, skills-based instruction in entry-level recreational boat operation.

Although there is no mandate for their use, all organizations and individuals providing recreational boating education are encouraged to design and deliver on-water courses that follow the ANSs. Doing so enables organizations and individuals to reap the benefits of higher quality instruction, students with greater readiness to engage in safer boating, and increased credibility of their programs in the marketplace. Following the standards also enables individuals and organizations to be part of creating the future of recreational boating education.

What if a program already follows a different standard?

The ANSs set the foundation for best practices in entry-level, on-water skills-based instruction. If the program under consideration already follows a standard, check the extent to which standard follows the ANSs. If the standard meets or exceeds the ANSs, there is no need to change the program. If the standard is set lower than the ANSs, make alterations to ensure the program meets or exceeds the ANSs.

If the program under consideration was developed by a different organization, such as a parent organization or national association, contact the program owner and inquire whether or not the course was designed to follow the ANSs.

- If the program is designed to follow the ANSs, check to ensure implementation of the program locally is taking place according to the program standards.
- If the program is not designed to follow the ANSs, work with the course owner to update the program so that it follows the ANSs.

What are the operating conditions associated with ANSs for on-water, entry-level skills instruction?

The IAS applies to on-water instruction designed to deliver the entry-level skills identified in the three skills-based ANSs for Power, Human-propelled, and Sailing. Therefore, its application is focused on the operating conditions established within each standard with respect to the boat characteristics, wind/water conditions and general operation conditions. Refer to the domain-specific skills ANS for details when using the IAS for designing and implementing on-water, skills-based instruction.

Is there a fee to use the ANSs and how are they accessed?

The ANSs and supporting documents are freely available for use by anyone interested in the design and delivery of on-water skills-based recreational boating instruction. They are included in the appendices to this document. They are also available for free download at the NOWS Program website.



To download free copies of the ANSs, visit: www.usnows.org.

Chapter 2. Begin the Journey

Begin - verb - begin \bi'gin\ - start; perform or undergo the first part of (an action or activity).

“Life is a **journey**, not a destination.”

- Ralph Waldo Emerson

To begin the journey of using American National Standards for on-water skills-based instruction for safer boating, it is important to establish a strong foundation. The vast majority of boat operators who should and will seek boating skills instruction are likely to be relatively new to the activity. Therefore, the first set of skills standards developed is targeted at the “entry-level” operator.

Entry-level operators

For the purpose of a discussion on *skills-based* instruction, consider the following definitions:

- **Novice:** a person who is new to an activity and typically has little or no knowledge or skills related to that activity.
- **Beginner:** a person who has begun a course of instruction or is learning the fundamentals.
- **Entry-level:** The proficiency reached by a person who has successfully completed an appropriate amount of beginner instruction, or has achieved a sufficient level of experience, to be ready to pursue (or ‘enter’ safely into) the associated activity.

In the context of skills-based instruction, the *novice* is someone who has decided they want to operate a recreational boat, but has perhaps never done so, or maybe tried it with supervision once or just a few times. The novice may have some notional concepts about boat operation but will likely have few direct *skills*, if any.

The *beginner* has enough motivation to ‘take the plunge’ and obtain instruction for boat operation skills. They may or may not hold a safe boating certificate (a state-issued credential based on boating *knowledge*), and they may have done a bit of research about boating, from books, magazines, videos, or Internet-based media.

The *entry-level operator* is a person who has successfully completed a beginner skills-based instructional program / course(s), or has sufficient personal experience, and is deemed ready to safely be in command of a recreational boat, under certain conditions. This includes whatever complementary knowledge, attitude and judgment is required to be able to safely operate the boat.

Designing on-water instruction for entry-level skills development

The Instructional Approach Standard (IAS) identifies characteristics of an instructional approach used to deliver entry-level recreational powerboating, human-propelled, or sailing skills.

Whereas the three domain-specific skills standards describe the outcomes that result from completing on-water, skills-based boating instruction, the IAS identifies the characteristics of the approach used to accomplish those outcomes. Therefore, the IAS considers a full range of factors that contribute to making available high-quality on-water skills instruction including:

- Content of the curriculum
- Qualities of the instructors involved
- Methods used to deliver instruction
- Quality of the learning environment (physically and emotionally)
- Quality of the facilities, boats and equipment used to support learning
- Risk management procedures

The Instructional Approach Standard explained

The Instructional Approach Standard (IAS) is designed to assist in the development of on-water, skills-based instruction in powerboating, human-propelled, and sailing skills. Its purpose is to assist education providers with developing and implementing programs that produce recreational boat operators who:

- Can perform the requisite entry-level skills associated with safer boating
- Have the knowledge needed to perform those skills
- Possess a positive attitude and good judgment toward safer boating

The IAS helps education providers understand how to know if an on-water boating education program is designed and prepared to deliver high-quality instruction. It does this by identifying best practices education providers should consider when designing their approach.

The IAS identifies the core characteristics and criteria needed to consider when designing or updating an approach to on-water skills-based instruction. It focuses on the overall manner of preparing, supporting, delivering and following up on the way in which knowledge, skills, etc., are passed on. This includes the infrastructure and overall support, as well as the act of delivering instruction before, during, and after the instructional experience.

While the IAS identifies general characteristics of an approach to instruction (the “what”), it does not prescribe the specific curriculum or instructional design that should be followed (the “how”), since that is a decision best made by the education provider. Although interrelated, each element in the IAS stands on its own as an independent characteristic of on-water instruction. This allows each element to be individually considered and designed into an on-water, skills-based instructional program. Some instructional approaches may contain additional elements not contained in the IAS. Other programs may contain a subset of the IAS elements. Additionally, instructional approaches may include knowledge, attitude, and/or judgment components in addition to those designed to deliver on-water skills.

The IAS contains 14 *Elements* and each element contains two parts. The first part of the element, Part “A,” identifies the characteristic of the instructional approach. The second part of the element, Part “B,” lists the criteria used to qualify the characteristic under consideration. For example:

IAS 1 A: The instructional approach will **include curriculums and course designs that encourage optimal learning by:**

B:

- a) Using current National On-Water Standards (NOWS).
- b) Using experiential education as the primary method of delivery.
- c) Combining and/or sequencing skills effectively.

It should be noted that the identifiers (‘IAS 1’ in the above example) assigned to the standard elements are for ease of reference only, and do not imply any priority, order or sequence for use in design or delivering an approach to on-water, skills-based instruction.

In the example above, the characteristic of the instructional approach is that it **has content and uses a method that encourages optimal learning**. The three criteria state that a) content centers on the skills identified within the domain-specific skills ANSs; b) the method for instruction is primarily experiential in nature; and c) the content and its delivery, however put together, is designed to move learners through a productive sequence of skills development through effective combining and sequencing.

The element identifies the characteristic and the criteria education providers should consider when designing or improving an approach to on-water, skills-based instruction. However, it does not prescribe the specific structure or details for how instruction should be delivered. It leaves open to the education provider decisions about what skills from the domain-specific skills ANSs to include in a course, the best sequence to deliver them, and what experiential approaches, activities and tools are used during instruction.

Designing New Programs

Like any quality product, an effective instructional approach begins with sufficient planning and a viable foundation. One of main purposes of the IAS is to provide a solid foundation upon which high-quality instructional approaches to learning entry-level recreational boating skills can be built. Course developers are asked to consider the following guidelines for designing entry-level skills-based instruction:

Decide first on the purpose and objectives of the instructional program.

Define and describe why time, energy and resources should be used for developing an on-water, skills-based instructional program in recreational boating. Ensure that there is clarity of purpose and intent for the program and what students should come away with having experienced it. This will help set the context for making decisions about the overall approach taken to design the on-water instruction. Include specific objectives for the level and kind of skills, knowledge, attitude and judgment the course should address.

Design the instructional approach so that the student is at the center.

Students are different from each other. They often prefer to learn in different ways and also differ in the speed at which they learn. Because of this, designing the approach so that the student is at the center (*student-centered learning*) is an approach that enables all students to complete the instruction with the ability to perform the same fundamental set of entry-level skills identified within the domain-specific skills ANSs. It does this by allowing students to learn at their own pace. Their rate of progression through the instructional program is determined by their capacity to perform the desired skills-based outcomes for each part of the program.

Some characteristics of student-centered learning include:

- Teaching and learning is “personalized,” meaning that it addresses the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students.
- Students advance in their education when they demonstrate they have learned the knowledge and skills they are expected to learn (proficiency-based learning).
- Students understand what they are expected to learn prior to entering learning experiences.
- Students have the flexibility to learn during nontraditional times, such as on weekends.
- Students are given opportunities to make choices about their own learning and contribute to the design of learning experiences.



To learn more about Student-Centered Learning, visit:

<http://ollyusofalhaj.ipgkti.edu.my/sumber/resosbestari/PENDEKATAN/scl/7%20SCL-Nanney.pdf>

Design the program to include the characteristics identified within the IAS.

Use the IAS to identify and build into the instructional approach specific characteristics (elements) associated with high quality on-water instruction. Design the approach to meet the three criteria (part B) for each characteristic. For example, consider the following information for Element IAS 1: *The instructional approach will include curriculums and course designs that encourage optimal learning by:*

- a) Using current National On-Water Standards (NOWS).
- b) Using experiential education as the primary method of delivery.
- c) Combining and/or sequencing skills effectively.

IAS 1 Characteristic: The instructional approach will...
Include curriculums and course designs that encourage optimal learning.

Best practice on-water instruction includes the use of a deliberate plan for what topics to include and an overall design for how to ensure students will learn them. The curriculum identifies *what* topics will be included in the instructional approach. Course designs plan *how* those topics will be instructed including the sequence of activities and experiences that will be used to guide students in learning to be proficient recreational boat operators. The curriculum and course design together enable the instructional approach to be explicit, deliberate and repeatable. It also allows the approach to be continuously improved over time.

Criterion a) Using current National On-Water Standards (NOWS).

The specific content of the curriculum and course designs focus on delivering skills identified within the ANSs for on-water instruction. The skills-based standards contain the fundamental skills that have been determined by subject matter experts to apply across the widest possible platforms and environments. Become familiar with the profile of all the skills contained within the domain-specific skills ANSs before designing a curriculum or instructional program. Including additional skills not contained within a skills-based ANS is certainly appropriate. Course developers and instructors are encouraged to add material to their offerings as applicable to their local markets, platforms, or waterways.

The ANSs are not in themselves courses. Rather, they describe the desired outcome as a result of successfully completing one (or more) beginner boating skills course(s). When the student completes the course(s), he or she should be able to perform some or all of the elements contained in a skills standard. Therefore, decisions should be made about how skills instruction could be delivered (e.g., one long course, multiple short courses, etc.).

The skills identified within each standard are all independent from each other. They can be learned, demonstrated and evaluated in most cases as separate skills without dependency across multiple skills. Therefore, they can be designed into an instructional program without having to link or connect them during instruction. Student performance on each skill can be assessed independently as well. A student can be highly proficient at one and have little proficiency in another. Therefore, when designing your approach to instruction consider each skill as an individual learning opportunity to be designed, delivered and evaluated independently from each other.

Familiarity with all of the skills standards elements will enable a better understanding of the full set of skills students should be able to perform as a result of your approach to instruction. This will also better inform the course designer about how best to organize and sequence learning objectives and instructional activities to best meet the needs of students.

Once the high-level design of the instructional program has been established, determine the number and scope of the course(s) required to deliver the skills associated with the curriculum, Then, determine which courses will deliver which skills to what level of proficiency.

Criterion b) Using experiential education as the primary method of delivery.

When skills development is the instructional focus, learning is best accomplished through experiential instruction *in situ* (i.e., the learning takes place in the actual environment that the boat would normally be operated). The skills standards have been developed to target the skills-based outcomes where active on-water, and hands-on approaches to recreational boating instruction are the primary method of delivery.

Experiential learning is one of the most influential ways to enable students to learn skills. Experiential learning occurs when a student engages in the process of learning through experiences and then reflects on the learning they achieve.

One of the more powerful applications of experiential learning is the use of real (vs. realistic) experiences on a boat during the learning process. As a result, it is important to consider all of the human senses associated with the experience of recreational boating. Thought should be given to designing experiential learning activities so that students develop all their available senses as they learn to demonstrate skilled recreational boat operation. Experiences can take into account the feel of the wind, the sounds of other people and boats, as well as the mechanical steps and procedures associated with boat operation. Awareness of the speed of the boat through the water is often difficult for students to perceive accurately. Continual coaching on this aspect makes the learning of many other tasks much easier.

Because experiential learning is so potent, the learning of several related skills can be combined into one activity or scenario. This has a synergistic effect that promotes efficiency and effectiveness of the instruction.



To learn more about experiential learning, visit: www.aee.org/what-is-ee.

Criterion c) Combining and/or sequencing skills effectively.

The domain-specific skills ANSs identify fundamental skills associated with entry-level recreational boat operation but they do not *prescribe* the exact order or sequence in which the skills must be taught or learned. It is mainly up to the course designer or instructor to determine the order or sequence. However, there is a logical progression for some of the skills contained within the standard making it more productive for a student to learn some of the skills before learning others. For example, it might make more sense for a student to learn the skill a stopping a boat before learning the skill to rescue a man overboard (MOB).

Some of the skills in the standards are larger in scope and more comprehensive than others. For example, the skill of returning to a MOB involves a number of different skills and behaviors put together to achieve a desired outcome - that is to quickly and safely maneuver the boat back to a person in the water. Whereas this comprehensive skill might be difficult to learn in the aggregate, it is an excellent learning opportunity that brings together several individual skills.

These skills will likely take more design time, as well as more actual time to learn during instruction. Considerations for this include:

- Allowing sufficient time to design more comprehensive skills.
- Parsing comprehensive skills into smaller components.
- Designing experiences for learning portions of a larger skill prior to other parts.

- Planning to use more instructional time on those skills that are larger in scope.
- Being mindful about the type of boat used for learning comprehensive skills.

Using the IAS to Review and Update an Existing Program

An existing approach to on-water, skills-based instruction can be reviewed and updated using the IAS and related domain-specific skills ANSs. Many of the guidelines written in the preceding section apply, and in this case, it is a matter of examining the existing approach to understand the extent to which it is designed and delivered relative to the standards.

Becoming familiar with content of the standards is equally important whether designing a new course or updating an existing one. Additional guidelines for reviewing and updating an existing program include:

Gather information and ideas from instructors about the existing approach and past student outcomes.

Since they are often the ones who experience all aspects of the instructional approach, instructors often have valuable perspectives about existing approach to instruction and ideas on how it might be improved. Instructors can be briefed on the standards and asked to compare the elements with what they have experienced in reality. Instructors can help determine if there are areas of the existing approach that might be missing, or need improvement so that they better align with the ANSs.

Observe a “day in the life” of instructors or students to learn about how well the existing approach is working to deliver the intended outcomes.

The appropriate ANS may be used as a checklist to help determine if all of the elements are being included in existing skills practical exams. Using the checklist to observe the approach to instruction can help quickly determine which qualities are present and which might be missing or need improvement.

Determine what changes, if any, should be made to the instructional approach.

After performing the appropriate amount of analysis, as suggested in the previous guidelines, decide what changes to make that will have the most impact on raising the quality of the instructional approach and the extent to which it follows the standards. Perhaps the approach is sufficient as is and requires no change, since it already aligns with the desired qualities of the IAS. Or, maybe some gaps were found between the current and desired skills taught within the existing instructional approach based on a review of the applicable domain-specific skills ANS, in which case changes to the approach may need to be implemented. In either case, by using the standards, the existing program can be evaluated to determine its level of quality and improve to develop and strengthen the approach.

Alignment of Knowledge with Skills

The primary focus of the on-water, skills-based ANSs is the preparation and delivery of an approach to on-water *skills* development associated with entry-level recreational boat operation. However, ***safer boating*** also requires *knowledge* as well as good *judgment* and a positive *attitude*. Like the ANSs for skills, ANSs also exist that identify the basic boating knowledge people should know to help safely operate a recreational boat at the entry level.

Education providers can choose if, when and how to integrate knowledge education within their on-water instructional approach. It should be noted that Knowledge Standard elements can be taught in a non-classroom setting as part of an on the water, skills-based course, particularly at the entry-level.



To learn more about the knowledge-based ANSs, visit: www.nasbla.org/education/national-ed-standards.

Q & A: Designing or Updating an Instructional Approach

Does an instructional approach need to be certified that it meets the standard?

Although not required, education providers are encouraged to follow the IAS and applicable domain-specific skills ANS in the design and implementation of on-water instruction. It is recommended that they be deliberate about their use of the standards to design and implement their on-water instructional program.

For existing programs, this can involve determining through self-assessment the extent to which the instructional approach follows the ANS for on-water instruction. The NOWS Program has developed three Self-Assessment Checklists for this purpose; one for each for domain of recreational boating instruction.



For a free copy of a NOWS Self-Assessment checklist for assessing the extent to which the instructional approach follows the ANS, visit: www.usnows.org.

Is a certified instructor required in order to use the standards?

Although a non-certified instructor could theoretically use the standards to design an instructional approach for delivering courses that include content from the domain-specific skills ANSs, it is important that instructors have appropriate experience, training and certification as required by the organization providing the education. If the instructional approach includes delivering a course with skills identified by a skills-based standard, and that course requires certification, then all the necessary procedures and protocols need to be followed to acquire the appropriate certification to include that course in the approach to instruction.

TSDs, such as this document, are not a replacement for acquiring the appropriate training for how to design, develop and deliver on-water instruction, or for how to establish and maintain the appropriate structures and systems needed to support on-water instruction. It is therefore also recommended that course developers receive training on how to prepare an approach to on-water instruction that is safe and effective.

How many elements within the IAS must be followed to ensure that an instructional approach is effectively prepared to deliver on-water, entry-level instruction?

The IAS identifies the core set of characteristics to consider when preparing an approach to delivering on-water entry-level skills instruction. Therefore, it is recommended that education providers consider all the elements within the standard when designing and preparing an approach to on-water instruction. The specific design of the approach is up the education provider based on the unique situation and conditions for instruction.

Can the Standard Elements be edited or changed?

The IAS has been designed to apply to all three of the domain-specific skills-based ANSs. The elements within the IAS have been focused on the operating conditions associated with those standards. Therefore, when designing an approach to instruction that delivers those skills with the conditions stipulated in the standards, the elements should remain intact and unchanged. However, an instructional approach can be designed so that it exceeds the levels of proficiency identified within the standard. In these situations the standard remains the same. It is the approach that is '*changed*' to exceed the standard. Appropriate precautions should always be taken to ensure a safe learning environment and experience.

Can more characteristics than are currently in the IAS be included in the design and delivery of a program?

Yes. The IAS contains the fundamental characteristics associated with preparing and delivering high-quality skills-based instruction in recreational boat operation at the entry-level, as agreed to by experts looking at a national level. There may be other characteristics or qualities not contained within the IAS that are relevant to a specific location or learning environment and that impact safe boat instruction or operation. If these additional characteristics of the instructional approach are relevant and important, then they should be included.

Chapter 3. **Make it Real**

Make - *verb* – meyk \ - 1. to bring into existence by shaping or changing material, combining parts, etc. 2. to produce; cause to exist or happen; bring about.

Studying the details behind each Standard Element can enable an education provider to more easily *make* available an effective on-water instruction program for safer boating.

IAS Element Details

This chapter contains detailed information in the form of ‘one-pagers’ for each element within the IAS, providing additional details about the intent behind the element along with explanations or clarifications.

Each numbered element (IAS 1 through IAS 14) is included at the top of the page followed by the detailed information about that element. In some cases, links are provided for accessing additional information about the element.

IAS 1. The instructional approach will **include curriculums and course designs that encourage optimal learning** by:

- Using current National On-Water Standards (NOWS).
- Using experiential education as the primary method of delivery.
- Combining and/or sequencing skills effectively.

About the Element

- The focus of this element is on the subject matter of the instruction and the way it is delivered. The subject matter content (curriculum) referred to comes from one or more of the NOWS skills-based ANSs:

EDU-1 On-Water Power Standards (Powerboating Skills ANS)

EDU-2 Skill -based Human-propelled Standard (Human-propelled Skills ANS)

EDU-3 Skills-based Sailboat Standard (Sailing Skills ANS)

- The IAS is designed to support recreational boating education providers focused on delivering the skills identified in the three skills-based NOWS according to the operating conditions for boat characteristics, wind/water, and weather. At some point in the future, the IAS may also be applicable for other forms of on-water instruction such as intermediate or advanced boat operation, instructor development, expanded operational parameters such as high wind speeds and water conditions, etc.
- Along with designing NOWS into programming, other skills or knowledge content can also be included as relating to personal or organizational standards that go beyond what is identified within the NOWS.
- Experiential learning is active, hands-on learning in which the student engages in the behaviors associated with operating a recreational boat. It is one of the more powerful and effective ways to train skills, particularly at the beginner level of skills development.
- Some of the skills in the NOWS are best learned before others. Some will take longer to acquire than others. Therefore, design courses to begin with simple individual skills and progress over time to skills that are more complex or require combined sets of skills.
- Include real time instructional techniques in course designs that test student learning throughout instruction. For example, design verbal quizzes into activities that test knowledge acquisition while students are demonstrating skills on the water.
- Encourage students to be in control of the boat, by having them take the helm and assume the role of skipper.
- Since experiential learning is so powerful for learning behavior, the behavior of the instructors is critical to the learning process. Therefore, be sure to design deliberate instructor modeling of the appropriate behaviors and attitudes into the course curriculum.



To download copies of the skills-based ANSs for SAIL, POWER and HUMAN-propelled recreational boat operation, or their accompanying “How to” Guides (Technical Support Documents) for designing on-water instruction based on those standards, visit: www.usnows.org.

IAS 2. The instructional approach will **manage student skills development** by:

- Defining performance objectives.
- Aligning student expectations with performance objectives.
- Assessing student progress toward performance objectives (e.g., rubrics).

About the Element

- The focus of this element is on how a student’s skills development is managed.
- Determine how explicit or deliberate the approach to assessing student progress toward performance objectives needs to be.
 - Explicit approaches often have supporting documents such as checklists that track progress, procedures for collecting feedback on students, and procedures for storing and retrieving information about student performance at a future date.
 - Implicit approaches usually rely on the use of verbal feedback to the student in the moment, and/or the memory of the instructor and their experiences with the students to provide feedback post learning experience.
 - Choose an approach based on what the organization needs and students want.
- Providing formal documentation of student progress toward performance objectives is important, especially in situations where students return for follow-on learning experiences or where progression is aimed at specific outcomes such as certification or some other credential.
- Assessing student progress can be more implicit or informal when delivering stand-alone, short courses, in which a student participates in a one-time learning event. This would depend on the students’ expectations for what they will receive as a result of participating in the learning event.
- Include the use of rubrics as performance assessment tools to formally set expectations for what will be learned, to assess progress in learning, and to help record progress toward skills acquisition.



To download free copies of rubrics used to assess student performance on the NOWS for SAIL, POWER and HUMAN-propelled recreational boating standards, visit: www.usnows.org.

IAS 3. The instructional approach will **employ an effective student/instructor ratio** by:

- Ensuring an adequate number of instructors are available to attend to the safety of all students involved.
- Ensuring an adequate number of instructors to provide effective instruction with individualized attention (e.g., direction, coaching, feedback, etc.).
- Considering available resources (e.g., time, boats, equipment, etc.)

About the Element

- The focus of this element is on ensuring an effective balance between those providing the learning and those doing the learning.
- Create an effective student/instructor ratio based on available time and resources. An effective ratio is one in which instructors are able to attend to the safety of all involved, can provide effective instruction with individualized attention, and have the resources they need to accomplish the learning objectives using experiential learning.
- The ratio between instructors and students may vary based on the type and size of the boats involved, the learning objectives, the experience of the instructors, the type of waterway, etc. For example, instructors with more experience may be able to effectively manage a larger number of students than those with less experience. Teaching complex skills might require a smaller instructor/student ratio than teaching basic skills.
- Availability of resources should allow students to engage in experiential learning. That means students on average spend more time actively engaging in learning and practicing skills than they do observing others perform the skills.
- It is important to communicate that instructors are not the only people involved in student safety. Expectations should be established that staff members as well as students are also actively involved in safety.

IAS 4. The instructional approach will **encourage different types of students to participate** by:

- Providing access to criteria for participation (e.g., age, weight, prerequisites, Essential Eligibility Criteria, etc.).
- Informing students beforehand what they may achieve as a result of participation (e.g., skills, knowledge, enjoyment, certification, etc.).
- Making reasonable modifications for students with disabilities.

About the Element

- The focus of this element is on providing all potential students with the information they need to make informed decisions about their participation in a course or program.
- This information should be made available with opportunities to have questions answered prior to committing to participation in a course or program.
- Information made available prior to commitment should include “performance objectives” associated with a course or program.
- Performance objectives are provided by the education provider and are focused on the purpose, intent and outcomes the course or program is designed to accomplish.
- “Prerequisites” for participation can include physical requirements and experience, as well as course prerequisites.
- Essential Eligibility Requirements can be formatted in a variety of ways. Choose a format that works best for your approach to instruction.



To learn more about establishing Essential Eligibility Requirements, visit:
www.ada.gov/pcatoolkit/chap1toolkit.htm



For an example of Essential Eligibility Requirements (Criteria), visit:
www.americancanoe.org/?page=EEC

- Consider using terms like “adaptive program” or “universal program” to signify that a course or program is designed to meet the needs of students with a broad range of challenges.
- Include the use of appropriate language (e.g., using the phrase ‘students with disabilities’ rather than students with ‘special needs’).
- “Reasonable modifications” means making slight modifications to a course or program (where appropriate) to fit the needs of students with disabilities (physical, developmental and/or cognitive) rather than fundamental changes or alterations to the design or delivery of a course or program.

IAS 5. The instructional approach will **prepare students for learning experience(s)** by:

- Determining student's desires, expectations, etc.
- Ensuring that students understand performance objectives.
- Determining in advance students' unique needs (e.g., scheduling, diet, swimming ability, propensity to motion sickness, health/medical considerations, etc.).

About the Element

- The focus of this element is on what happens with the student *before* instruction begins.
- Potential students should have access to information about the performance objectives of any course or program they might attend. Performance objectives identify the specific performance-related skills, knowledge, attitude and judgments the course or program is designed to develop.



For more information about writing effective performance objectives, visit:
www.uwo.ca/tsc/graduate_student_programs/pdf/LearningObjectivesArreola.pdf

- Gather information about student's desires and expectations from a course prior to his or her commitment to attend. This will help the education provider understand what success will look like for the student. It will also enable the student and the education provider to ensure an effective fit between what the course is designed to provide and what the student expects to learn. The education provider can re-direct the student into a more suitable course if appropriate.
- Simply allowing students to express their needs and feel like they have been heard is an important consideration toward a successful experience.

IAS 6. The instructional approach will **support student learning during instruction** by:

- Staying focused on performance objectives.
- Adjusting pace to optimize learning.
- Allowing time for personal reflection, individual practice, etc.

About the Element

- This element is aimed at the focus, pacing and individual time actually present *during* instruction.
- Staying focused on performance objectives identified by the education provider helps ensure that the promises for what would be offered during a course are actually delivered during delivery.
- Allow for adjustments in pace based on factors such as: the level of difficulty of the skill being taught; the readiness of the students to learn the next skill; and the learning preferences of the students involved.
- Allowing time for personal reflection and individual practice can help students digest the learning and practice the skills they are being taught. Group time should be balanced with individual time.
- If available, consider scheduling instructional sessions with days in between so students have time to practice what they learn.

IAS 7. The instructional approach will **provide students with effective feedback** by:

- Delivering feedback during and after the course.
- Ensuring feedback is specific and actionable.
- Using a variety of appropriate feedback tools (e.g., videos, diagrams, textbook reviews, visual aids, checklists, etc.).

About the Element

- The focus of this element is on the quality of feedback provided to students as part of a course or program.
- Students should receive feedback during and immediately following instructional experiences.
- Include formative feedback in which students receive real time feedback during an instructional activity. This will provide opportunities to understand their current level of proficiency and to try something new or different during the learning experience.
- Design the approach to include summative feedback, which takes place at the conclusion of a course or program and provides insights and take-a-ways that encourage continued learning.
- Specific and actionable feedback refers to the quality of feedback instructors provide to students. The goal is to ensure students can act on the feedback they receive, whether it is formative or summative.
- Include tools that make easier the instructor's job of providing effective feedback. Using a variety of feedback tools also increases the likelihood that students with different learning preferences will benefit.

IAS 8. The instructional approach will **ensure instructor effectiveness** by:

- Selecting (e.g., identifying, recruiting, evaluating, hiring, etc.) qualified instructors.
- Developing (e.g., preparing, assessing, supporting, mentoring, etc.) successful instructors.
- Retaining (e.g., supporting, providing continuing education, compensation and opportunities for growth, etc.) quality instructors.

About the Element

- The quality of a course or program is largely determined by the quality of the instructors who deliver it. The focus of this element is on ensuring the instructional approach includes deliberate steps to ensure high quality instructors are involved.
- Selecting qualified instructors means instructors have the qualifications needed to deliver the particular course or program. Qualifications can be legal in focus, such as having the credentials (e.g., a Merchant Mariner Credential) needed to operate boats involved in the learning situation. They can also be content-specific such as having the instructor certification needed to deliver a specific course. Qualifications can also be focused on having the requisite experience or formal credential in teaching that enables an instructor to take on the required level of responsibility.



For information on how to acquire a Merchant Mariner Credential, visit: www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/National-Maritime-Center-NMC/merchant_mariner_credential/.

- Developing instructors is about ensuring instructors grow and develop in their capacity to deliver instruction. Establishing an instructor development program that includes instructor assessment and feedback, mentor, etc. as part of an instructional approach enables continued improvement of a course or program as well as the people who deliver it.
- Retaining instructors tends to take less time, energy and resources, and often provides for greater continuity in course quality than finding and involving new instructors. One way to keep good instructors is through compensation. However, most instructors also want to continue learning and developing. Build in where possible opportunities for instructors to engage in continuous education and training, to grow and develop their skills, and to broaden their instructional experiences in new and different ways.
- Ensuring instructor effectiveness also means choosing, developing and retaining people who have values, personality and strengths that are consistent with the core values and mission of the education provider. This helps ensure an appropriate fit between the people involved in instruction and the approach to instruction used by the education provider. Fit, along with skills, knowledge and attitude increase the likelihood instructors are qualified to contribute toward delivering a high-quality educational program.

IAS 9. The instructional approach will **ensure instructors deliver quality program content** by:

- Knowing the content being delivered.
- Verbalizing and demonstrating skills effectively and with a positive attitude.
- Modeling behaviors (e.g., wearing life jackets, using three points of contact, using proper skills even when not being demonstrated, etc.) that emphasize safety.

About the Element

- The focus of this element is on the general qualities of the instructors involved in delivering a course or program.
- This element relates to element IAS 8 (“**ensure instructor effectiveness**”) in that it identifies some of the characteristics associated with quality instructors.
- Quality program content is best delivered when instructors know the content, *and* can demonstrate the skills being taught. Ensure instructors have both the knowledge and the skills needed to effectively deliver a particular course or program.
- Quality program content is also best delivered when those involved in delivery model the attitudes and behaviors consistent with the performance objectives of the course as well as the best practices for safe enjoyment on the water. Modeling attitude and behavior not only applies to instructors, but also to any staff members not directly involved in instructional delivery.
- Students will take away as much (if not more) from the behaviors of instructors as they will from what instructors say. Inconsistency between what instructors say and what they do will distract students from learning by creating lack of credibility in what is being taught. Take deliberate steps to ensure consistency between what instructors say and what they do *during*, as well as *before* and *after* formal instructional experiences.
- Consistency in use of language and terminology also contributes to delivering quality program content. Committing to a standardized language and terminology allows students to learn information consistent with the body of knowledge available and transfer their use of the language outside the course or program.

IAS 10. The instructional approach will **promote student learning** by:

- Providing support information (e.g., safety briefings, textbooks, handouts, pre-departure checklists, etc.) to enhance experiential activities.
- Using a variety of instructional techniques (e.g., hands-on practice, guided self-discovery, teachable moments, repetitive practice drills, positive behavior reinforcement, etc.).
- Encouraging students to seek additional practice opportunities.

About the Element

- The focus of this element is on promoting student learning with support materials and teaching techniques.
- The program itself should to be designed with the student at the center and instructors should deliver it accordingly.



To learn more about Student-Centered Learning, visit:

<http://ollyusofalhaj.ipgkti.edu.my/sumber/resosbestari/PENDEKATAN/scl/7%20SCL-Nanney.pdf>

- One way to promote student learning is to integrate opportunities to learn both the knowledge and skills associated with entry-level proficiency in recreational boat operation. Providing instructors and students with support information such as textbooks and checklists can enhance the effectiveness of experiential activities. Follow-up conversations focused on understanding also help to integrate knowledge and skills and promotes student learning.
- People learn differently. The more people enjoy learning, the more they will want to use what they learn. Incorporating a variety of instructional techniques into a program increases the likelihood that different students will both enjoy and learn more effectively from one technique or another.
- Course developers should think beyond the traditional “classroom,” and recognize that knowledge acquisition can occur in any environment, including in the boat, on the dock, near the water, etc. Take advantage of all spaces and locations to transfer knowledge and help student understanding.
- Practice opportunities inside and/or outside the formal program enables students to deepen their learning and enter the next phase of learning at a greater level of readiness. Where possible, design the approach to include opportunities for individual practice during scheduled course time, as well as outside the formal course structure.

IAS 11. The instructional approach will **enable a safe learning environment** by:

- Providing a comfortable physical environment (e.g., access to food and drinking water, bathroom facilities, shelter, life jackets, etc.) for students and instructors.
- Providing an emotionally supportive environment (e.g., managing perceived and real emotional risks, allowing mistakes to be made safely, proactively identifying and addressing concerns, etc.).
- Using appropriate strategies for coping with changing environmental/weather conditions (e.g., sun protection, access to foul weather gear, layered clothing, etc.)

About the Element

- The focus of this element is on the physical and emotional learning environment associated with the course or program.
- The physical environment is necessary to ensure the safety of all involved in the learning, including instructors, students, additional non-instructional staff and bystanders. If the physical needs of students or instructors are managed well, they will be better able to focus their attention on quality of the student experience and the learning associated with it.
- Physical safety involves what takes place on or near the boats, as well as the general facilities. For example, physical safety issues associated with getting to the boats and equipment are important to manage, as are safety issues once on a dock or boat.
- The emotional environment is a key factor in any approach to learning. It exists regardless of whether or not it is managed. Include psychological or emotional aspects of learning as well as the cognitive and behavioral aspects. For example, ensure instructors are trained to deliver student feedback in an affirmative or developmental fashion that excites students to want to continue their learning, growth and development. Ensure all those involved in managing the learning experience attend to the perceived risks, both emotionally and physically.
- Ensuring physical and emotional safety in the learning environment means being ready, willing and able to adjust to changing weather conditions that are typical when operating on the water. Include procedures and resources needed to predict and respond to changing conditions.

IAS 12. The instructional approach will **use boats, equipment and facilities appropriate for the instructional activity** by:

- Ensuring boats and equipment needed to deliver an effective program are available and functional.
- Ensuring availability and functionality of safety equipment (e.g., communication devices, rescue equipment, first-aid supplies, anchor, etc.).
- Complying with applicable federal, state and local laws, regulations, manufacturer recommendations, etc.

About the Element

- The focus of this element is on quality of facilities, boats and equipment associated with the instructional activities in the course or program.
- “Appropriate” means that boats, equipment and facilities are available, functioning and in good legal standing.
- “Functional” refers to the aesthetics as well as “working order” of the boats, equipment and facilities.
- Laws and regulations are different depending on the location of the learning environment. Ensure the program complies with applicable federal, state and local laws, regulations, manufacturer recommendations, etc.
- Include a deliberate process for ensuring all vessels and equipment are in good working order and legal standing. Consider daily or periodic vessel safety inspections. The USCG Auxiliary (<http://www.cgaux.org>) or US Power Squadrons (<https://www.usps.org>) can also be involved in providing vessel safety checks. Contact them directly for further information.



For extensive information about required and recommended safety equipment, visit www.vesselsafetycheck.org.

- Have in place the appropriate insurance policies that are required or recommended for the given location and situation.

IAS 13. The instructional approach will **manage risk** by:

- Creating and following risk management procedures (e.g., Emergency Action Plan [EAP]).
- Reviewing procedures periodically and updating as needed.
- Ensuring instructors are able to effectively implement emergency procedures.

About the Element

- The focus of this element is on having and using safety procedures that manage the risks associated with learning how to operate a recreational boat.
- Managing risks involves designing into the instructional approach the infrastructure, procedures and tools needed to reduce risks. Be sure to have in place both proactive and reactive approaches to risk management
 - Proactive risk management involves such activities as ensuring procedures are in place for having and using safety equipment such as communication devices, rescue and first-aid supplies, anchors, towboats, etc.
 - Reactive risk management procedures identify what actions should be taken during emergency situations. They are typically developed for such topics as: deciding when to terminate on-water activity due to weather; steps to take if someone is injured, etc.
- Being able to implement a safety procedure successfully is critical. It is important to ensure that anyone involved in the learning context has the knowledge, skills and judgment to effectively implement any risk management procedure or use any safety equipment (e.g., they know what actions to take, how to take them, and when to initiate them).
 - Include use of risk management procedures and equipment in instructor and staff training activities.
- According to the American with Disabilities Act (ADA), if an organization providing education has more than 10 employees, the Emergency Action Plan needs to be written.



To ensure the approach is current with ADA guidelines, visit: www.ada.gov.



For more information about Emergency Action Plans, visit: www.osha.gov/SLTC/etools/evacuation/eap.html.

- Include periodic (e.g., once every six months, at the start of each new boating season, etc.) and systematic (e.g., engaging all involved in instruction; using checklists, etc.) reviews of safety procedures and equipment designed to manage risks.

IAS 14. The instructional approach will **incorporate a program improvement process** by:

- Reviewing course delivery, instructor effectiveness, and student outcomes against performance objectives.
- Collecting student feedback on course effectiveness and customer satisfaction.
- Looking externally to seek improvement ideas.

About the Element

- The focus of this element is on improving the overall instruction program.
- Improvement tools can be formal, informal or some combination of both.
 - Formal approaches include building into a course or program student, parent or even instructor feedback or satisfaction surveys. These can be done using paper or online forms.
 - Informal feedback approaches can include having conversations with students or parents during or at the close of courses or programs.
- It is important to remember that students may provide the program with feedback using social media. It is recommended to have a social media presence when possible to monitor that method of feedback.
- Consider that the “customer” might be the individual who attended the course and learned the skills. Or it might be the person who paid for someone else (e.g., their child) to attend the course. Consider both when collecting feedback about customer satisfaction.
- It is recommended to collect feedback both during and at the conclusion of a course or program. Feedback during a course allows for corrections or modifications that can improve the remainder of the learning experience. Collecting feedback post-program allows for potentially more objective feedback.
- Feedback is most effective when it is considered and responded to. Therefore, include a process for reviewing *and responding* to feedback that is collected. Be sure to include instructors and staff (when appropriate) in the process to help ensure a more effective response to the feedback and great acceptance of change made as a result.
- Courses or programs that are part of a larger association or organization may have formal feedback collection mechanisms, which should be built into the program. Ensure the association or organization receives the feedback and that any changes made locally to an instructional approach are acceptable to the larger organization.
- Looking externally for improvement ideas means looking to other groups, organizations, or trade associations for information, suggestions or best practices associated with instruction.

Appendix A: On-Water Recreational Boating Skills Standard - Instruction

Following is the *On-Water Recreational Boating Skills Standard – Instruction (EDU-4 On-Water Instruction Standard)* also known as the “Instructional Approach Standard,” or “IAS.” The IAS went into effect on January 25, 2018. Since this American National Standard serves as the primary source document for the design, preparation and implementation of entry-level recreational boat instruction, it is recommended that a copy of the original ANS be included with course or instructional materials. This will help ensure all those who design or deliver instruction share a common understanding of the approach being used for instruction.



To download a free copy of the *Instructional Approach Standard*, visit: www.usnows.org.



Setting Standards for Safer Boating

The ABYC Standards and Technical Information Reports for Small Craft are the product of a consensus of representatives of government, industry and public sectors. It is intended solely as a guide to aid manufacturers and the marine community in the design, construction, equipage and maintenance of small craft.

ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the standards and Technical information reports.

**ABYC EDU-4 January, 2018
On-Water Instruction Standard
On-Water Education Project Technical
Committee**

EDU-4

ON-WATER INSTRUCTION STANDARD



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This list represents the membership at the time the Committee was balloted.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of ABYC or any document developed by the committee on which the member serves.

This standard was developed under procedures accredited as meeting the criteria for American National Standards. The Project Technical Committee that approved the Standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum performance requirements.

ABYC's Project Technical Committee meetings are open to the public. All contact regarding standards activity, interpretations, or meeting attendance should be directed to the ABYC Technical Department at comments@abycinc.org.

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REQUEST FOR INTERPRETATIONS

Upon written request, the On-Water Education PTC will render an interpretation of any requirement of the Standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the PTC in a manner in which they may be answered in a yes or no fashion.

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EDU-4 On-Water Instruction Standard

National System of Standards for Recreational Boat Operation

Title: On-Water Recreational Boating Skills Standard – INSTRUCTION

Purpose: To establish the national consensus-based standard for use by course providers for approach to design and delivery to raise the overall level of quality, availability and consistency of entry-level instruction in recreational boat operation.

This Standard accompanies the National On-Water Standards (NOWS) for recreational boating skills (*EDU-1 On-Water Power Standards; EDU-2 Skills-based HUMAN-propelled Boat Standard; EDU-3 Skills-based Sailboat Standard*) and assists education providers with developing and implementing programs that produce recreational SAIL, POWER, and HUMAN-propelled boat operators who:

- Can perform the skills identified by the NOWS;
- Have the knowledge needed to perform the NOWS skills; and
- Possess a positive attitude and good judgment toward safe recreational boating.

Scope: This is the core voluntary standard designed to apply to entry-level POWER, SAIL and HUMAN-propelled on-water skills-based courses in the U.S. states and territories and District of Columbia and function within a national system of standards for recreational boat operation.

Please Note: The number before each element within the standard is included for reference only and does not indicate any prescribed order, sequence, or priority.



Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a National System of Standards for Recreational Boat Operation.

1. The instructional approach will **include curriculums and course designs that encourage optimal learning** by:
 - Using current National On-Water Standards (NOWS).
 - Using experiential education as the primary method of delivery.
 - Combining and/or sequencing skills effectively.
2. The instructional approach will **manage student skills development** by:
 - Defining performance objectives.
 - Aligning student expectations with performance objectives.
 - Assessing student progress toward performance objectives (e.g., rubrics).
3. The instructional approach will **employ an effective student/instructor ratio** by:
 - Ensuring an adequate number of instructors are available to attend to the safety of all students involved.
 - Ensuring an adequate number of instructors to provide effective instruction with individualized attention (e.g., direction, coaching, feedback, etc.).
 - Considering available resources (e.g., time, boats, equipment, etc.).
4. The instructional approach will **encourage different types of students to participate** by:
 - Providing access to criteria for participation (e.g., age, weight, prerequisites, Essential Eligibility Criteria, etc.).
 - Informing students beforehand what they may achieve as a result of participation (e.g., skills, knowledge, enjoyment, certification, etc.).
 - Making reasonable modifications for students with disabilities.
5. The instructional approach will **prepare students for learning experience(s)** by:
 - Determining student's desires, expectations, etc.
 - Ensuring that students understand performance objectives.
 - Determining in advance students' unique needs (e.g., scheduling, diet, swimming ability, propensity to motion sickness, health/medical considerations, etc.).
6. The instructional approach will **support student learning during instruction** by:
 - Staying focused on performance objectives.
 - Adjusting pace to optimize learning.
 - Allowing time for personal reflection, individual practice, etc.
7. The instructional approach will **provide students with effective feedback** by:
 - Delivering feedback during and after the course.
 - Ensuring feedback is specific and actionable.
 - Using a variety of appropriate feedback tools (e.g., videos, diagrams, textbook reviews, visual aids, checklists, etc.).
8. The instructional approach will **ensure instructor effectiveness** by:
 - Selecting (e.g., identifying, recruiting, evaluating, hiring, etc.) qualified instructors.
 - Developing (e.g., preparing, assessing, supporting, mentoring, etc.) successful instructors.
 - Retaining (e.g., supporting, providing continuing education, compensation and opportunities for growth, etc.) quality instructors.



Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a National System of Standards for Recreational Boat Operation.

9. The instructional approach will **ensure instructors deliver quality program content** by:
 - Knowing the content being delivered.
 - Verbalizing and demonstrating skills effectively and with a positive attitude.
 - Modeling behaviors (e.g., wearing life jackets, using three points of contact, using proper skills even when not being demonstrated, etc.) that emphasize safety.

 10. The instructional approach will **promote student learning** by:
 - Providing support information (e.g., safety briefings, textbooks, handouts, pre-departure checklists, etc.) to enhance experiential activities.
 - Using a variety of instructional techniques (e.g., hands-on practice, guided self-discovery, teachable moments, repetitive practice drills, positive behavior reinforcement, etc.).
 - Encouraging students to seek additional practice opportunities.

 11. The instructional approach will **enable a safe learning environment** by:
 - Providing a comfortable physical environment (e.g., access to food and drinking water, bathroom facilities, shelter, life jackets, etc.) for students and instructors.
 - Providing an emotionally supportive environment (e.g., managing perceived and real emotional risks, allowing mistakes to be made safely, proactively identifying and addressing concerns, etc.).
 - Using appropriate strategies for coping with changing environmental/weather conditions (e.g., sun protection, access to foul weather gear, layered clothing, etc.)

 12. The instructional approach will **use boats, equipment and facilities appropriate for the instructional activity** by:
 - Ensuring boats and equipment needed to deliver an effective program are available and functional.
 - Ensuring availability and functionality of safety equipment (e.g., communication devices, rescue equipment, first-aid supplies, anchor, etc.).
 - Complying with applicable federal, state and local laws, regulations, manufacturer recommendations, etc.

 13. The instructional approach will **manage risk** by:
 - Creating and following risk management procedures (e.g., Emergency Action Plan [EAP]).
 - Reviewing procedures periodically and updating as needed.
 - Ensuring instructors are able to effectively implement emergency procedures.

 14. The instructional approach will **incorporate a program improvement process** by:
 - Reviewing course delivery, instructor effectiveness, and student outcomes against performance objectives.
 - Collecting student feedback on course effectiveness and customer satisfaction.
 - Looking externally to seek improvement ideas.
-



Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a National System of Standards for Recreational Boat Operation.

*Origin and Development of EDU-4, On-Water
Instruction Standard*

This is the first publication of EDU-4. It is the work of the On-Water Education Project Technical Committee.

ABYC technical board rules provide that all reports, including standards and technical information reports, are advisory only. Their use is entirely voluntary. They represent, as of the date of publication, the consensus of knowledgeable persons, currently active in the field of small craft, on performance objectives that contribute to small boat safety.

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Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a National System of Standards for Recreational Boat Operation.

Appendix B: Powerboating Skills ANS

Following is the *On-Water Recreational Boating Skills Standard – Power*¹² also known as the “Powerboating Skills ANS.” The Powerboating Skills ANS went into effect on November 12, 2015. Since this American National Standard serves as the primary source document for the design, development and implementation of entry-level recreational powerboat instruction, it is recommended that a copy of the original ANS be included with course or instructional materials. This will help ensure those who design or deliver instruction, as well as students receiving instruction all share the same starting point for understanding the content of the ANS.



To download a free copy of the *Powerboating Skills ANS*, visit: www.usnows.org.

¹² The title of the Standard is *On-Water Recreational Boating Skills Standard – Power*, however The American Boat & Yacht Council has titled the American National Standard as *EDU-1 On-Water Power Standard (or ‘Standards’)* to fit within its categorization system for standards. Both titles are synonymous and may be used interchangeably.



EDU-1

**On-Water Power Standard
On-Water Education Project Technical
Committee**

The ABYC Standards and Technical Information Reports for Small Craft are the product of a consensus of representatives of government, industry and public sectors. It is intended solely as a guide to aid manufacturers and the marine community in the design, construction, equipage and maintenance of small craft.

ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the standards and Technical information reports.

EDU-1

ON-WATER POWER STANDARDS



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EDU-1 On-Water Power Standards

National System of Standards for Recreational Boat Operation

Title: On-Water Recreational Boating Skills Standard – Power

Purpose: To establish the national consensus-based standard for use by course providers for course design and student assessment to raise the overall level of quality, availability and consistency of entry level on-water, skill-based instruction in recreational powerboat operation.

Scope: This is the core voluntary standard designed to apply to entry-level powerboat on-water skill-based courses in the U.S. states and territories and District of Columbia and function within a national system of standards for recreational boat operation.

POWER

Domains of application

Boat Characteristics: Less than 26 feet

Wind/Water Conditions: Less than 10 knots of wind; waves 1 foot or less

Operation Conditions: Daytime with no restricted visibility or threatening weather

NOTE: For those recreational boat operations where the boat is in motion, operator skill-based standard elements in this On-Water POWER Standard are accomplished according to aids to navigation, navigational rules, and regulations applicable to the location in which the skill is being executed.



Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a *National System of Standards for Recreational Boat Operation*. Document Title: *On-Water Recreational Boating Skills Standard – Power*.

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Operation #1: Prepare to depart

The operator will be able to:

- 1.1 **A: Put on a life jacket...** B: ensuring it is serviceable, fits properly, and is appropriate for the boat/activity.
Note: This Standard element is repeated as Standard element 7.4
- 1.2 **A: Confirm that all others on the boat put on their life jacket...** B: ensuring the life jackets are serviceable, fit properly, and are appropriate for the boat/activity.
Note: This Standard element is repeated as Standard element 7.5
- 1.3 **A: Inspect boat systems and safety equipment...** B: by completing a pre-departure checklist noting legally required (state, federal) equipment, and manufacturer recommendations appropriate for the intended voyage and forecasted weather; identify mooring/towing/anchoring point.
- 1.4 **A: Obtain (recite), weather conditions, forecasts and evaluate hazards to navigation and other environmental factors...** B: by assessing whether conditions are favorable for the voyage for length/time of trip.
- 1.5 **A: Board the boat...** B: by using three points of contact and distributing persons/gear while maintaining stability.
- 1.6 **A: Prepare the boat for departure...** B: by readying lines, equipment and crew for intended departure maneuver.
- 1.7 **A: Start the engine...** B: safely and ensure it is running properly.
Note: This Standard element is repeated as Standard element 7.7

Operation #2: Leave a dock/slip/mooring/ramp/shoreline

The operator will be able to:

- 2.1 **A: Get underway...** B: by using shift, throttle and steering, giving consideration to wind and current, while properly managing lines and maintaining a proper lookout throughout all activities.
- 2.2 **A: Check for a clear departure...** B: by confirming there are no conflicts with boat's intended actions in relation to other boats or activities in the vicinity.
- 2.3 **A: Depart a mooring...** B: by avoiding contact with the mooring line and buoy.
- 2.4 **A: Leave from the shoreline...** B: without damaging the propulsion unit and avoiding people in the water.

Operation #3: Maneuver in close quarters

The operator will be able to:

- 3.1 **A: Turn the boat...** B: by safely executing a pivot turn of at least 180-degrees within a space of 1 to 2 boat lengths.
- 3.2 **A: Hold position of the boat...** B: near an object in the water for at least a minute within two boat lengths.
- 3.3 **A: Maintain directional control at minimum control speed...** B: keeping boat on a predetermined course for a distance of at least five boat lengths.
- 3.4 **A: Maintain proper lookout...** B: by demonstrating frequent 360-degree visual checks and identifying potential hazards.

Note: This Standard element is repeated as Standard element 7.3

- 3.5 **A: Bring the boat from idle speed*** to a complete stop... B: within one boat length.
*Note: Standard element 3.5 is intended to be carried out when the boat is operating with the drive continuously in forward gear and with the boat having forward motion prior to demonstrating the skill. Under some conditions associated with demonstrating level of proficiency on the standard element, it may be necessary for a Boat Operator to add a slight amount of throttle to achieve sufficient headway and steering control before initiating the stop.
- 3.6 **A: Back the boat...** B: in a predetermined direction for five boat lengths.

Operation #4: Operate in open water

The operator will be able to:

- 4.1 **A: Trim the boat...** B: while underway by adjusting position of persons/gear and engine/drive trim or trim tabs.
- 4.2 **A: Turn the boat at high speed...** B: by assuming a new heading 45 degrees to port and starboard using appropriate throttle control.
- 4.3 **A: Steer a straight course...** B: at high speed in a predetermined direction for 50 boat lengths.
- 4.4 **A: Throttle up to and down from slow speed to high speed to slow speed...** B: smoothly and with consideration of passengers/crew and gear.
- 4.5 **A: Stop the boat...** B: from planing or normal operating speed to within five boat lengths ensuring the wake does not over take the stern and with consideration of passengers/crew and gear.
- 4.6 **A: Make course alterations...** B: by smoothly changing direction 45 degrees.
- 4.7 **A: Cross waves or wakes...** B: by using appropriate angle of approach and controlling boat speed for the given wake/wave size and frequency.
- 4.8 **A: Maintain proper lookout...** B: by demonstrating frequent 360-degree visual checks and identifying potential hazards.
- 4.9 **A: Avoid collisions...** B: by maintaining a proper lookout, assessing potential hazardous situations and taking early and decisive action.

Operation #5: Arrive at a dock/slip/mooring/ramp/shoreline (make first contact)

The operator will be able to:

- 5.1 **A: Prepare the boat for arrival...** B: by readying lines, equipment and passengers/crew for intended arrival maneuver.
- 5.2 **A: Check for clear approach...** B: by confirming there are no conflicts between boat's intended actions and other boats and activities in the vicinity.
- 5.3 **A: Bring the boat to a predetermined point...** B: by using a stopping procedure; giving consideration to wind, current and boat traffic; and coming to a full, safe stop within 12 inches of the dock/slip/mooring/ramp/shoreline (point of contact).
- 5.4 **A: Arrive at the shoreline...** B: without damaging the propulsion unit and avoiding people in the water.

Operation #6: Secure the boat (preparing to leave boat unattended)

The operator will be able to:

- 6.1 **A: Secure the boat to the dock/slip/mooring/shoreline...** B: by using appropriate knots and lines, anticipating winds, currents and tides expected.
- 6.2 **A: Prepare to depart...** B: having checked and/or secured systems and equipment.
- 6.3 **A: Depart the boat...** B: by disembarking using three points of contact.

Operation #7: Perform general safety/emergency procedures/maneuvers

The operator will be able to:

- 7.1 **A: Return to man overboard...** B: within 10 feet and less than 1 minute.
- 7.2 **A: Retrieve man onboard...** B: without further injury to the person.
- 7.3 **A: Maintain proper lookout...** B: by demonstrating frequent 360-degree visual checks and identifying potential hazards.
Note: This Standard element is repeated as Standard element 3.4
- 7.4 **A: Put on a life jacket...** B: ensuring it is serviceable, fits properly, and is appropriate for the boat/activity.
Note: This Standard element is repeated as Standard element 1.1
- 7.5 **A: Confirm that all others on the boat put on their life jacket...** B: ensuring the life jackets are serviceable, fit properly, and are appropriate for the boat/activity.
Note: This Standard element is repeated as Standard element 1.2
- 7.6 **A: Stop the boat in "emergency" mode...** B: from planing or normal operating speed in less than 2 boat lengths, turning to ensure stern wave passes behind the boat with consideration of passengers and gear.
- 7.7 **A: Start the engine...** B: safely and ensure it is running properly.
Note: This Standard element is repeated as Standard element 1.5

* * * * *

Origin and Development of EDU-1, On-Water Power Standard

This is the first publication of EDU-1. It is the work of the On-Water Education Project Technical Committee.

* * * * *

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Appendix C: Human-propelled Skills ANS

Following is the *On-Water Recreational Boating Skills Standard – Human-propelled*¹³ also known as the “Human-propelled Skills ANS.” The Human-propelled Skills ANS went into effect on October 11, 2016. Since this American National Standard serves as the primary source document for the design, development and implementation of entry-level recreational Human-propelled craft instruction, it is recommended that a copy of the original ANS be included with course or instructional materials. This will help ensure those who design or deliver instruction, as well as students receiving instruction all share the same starting point for understanding the content of the ANS.



To download a free copy of the *Human-propelled Skills ANS*, visit: www.usnows.org.

¹³ The title of the Standard is *On-Water Recreational Boating Skills Standard – Human-propelled*, however The American Boat & Yacht Council has titled the American National Standard as *EDU-2 Skill-based Human-propelled Standard* to fit within its categorization system for standards. Both titles are synonymous and may be used interchangeably.



Setting Standards for Safer Boating

EDU-2

**On-Water Human Standard
On-Water Education Project Technical
Committee**

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ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the standards and Technical information reports.

EDU-2

SKILL-BASED HUMAN-PROPELLED STANDARD



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This list represents the membership at the time the Committee was balloted.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of ABYC or any document developed by the committee on which the member serves.

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REQUEST FOR INTERPRETATIONS

Upon written request, the On-Water Education PTC will render an interpretation of any requirement of the Standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the PTC in a manner in which they may be answered in a yes or no fashion.

The committee reserves the right to reconsider any interpretation when or if additional information which might affect it becomes available to the PTC. Persons aggrieved by an interpretation may appeal to the Committee for reinterpretation.



Produced through USCG grant funding to US Sailing to facilitate the development of On-Water skills-based standards as part of a *National System of Standards for Recreational Boat Operation*. Page 0

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EDU-2 Skills-based HUMAN-propelled Boat Standard National System of Standards for Recreational Boat Operation

Title: On-Water Recreational boating Skills Standard – HUMAN-propelled

Purpose: To establish the national consensus-based standard for use by course providers for course design and student assessment to raise the overall level of quality, availability and consistency of entry level On-Water, skills-based instruction in HUMAN-propelled recreational boat operation.

Scope: This is the core voluntary standard designed to apply to entry-level HUMAN-propelled On-Water skills-based courses in the U.S. states and territories and District of Columbia and function within a national system of standards for recreational boat operation.

HUMAN

Domain of application

Boat Characteristics: Paddle craft is a vessel powered only by its occupant(s), using a single or double-bladed paddle as a lever without the aid of a fulcrum provided by oar locks, thole pins, crutches, or similar arrangements. Rowing craft is a vessel powered only by its occupants, using an oar as a lever with the aid of a fulcrum provided by oar locks, thole pins, crutches, or similar arrangements.

Wind/Water Conditions: Flat water, with current less than 1 knot, protected from the wind and waves

Operation Conditions: Daytime with no restricted visibility or threatening weather

Stages of entry-level recreational boat operation

NOTE: For those recreational boat operations where the boat is underway, individual skills-based standard elements in this On-Water HUMAN Standard are to be accomplished in accordance with any aids to navigation, navigational rules, and any regulations applicable to the location in which the skill is being executed.

Operation #1: Prepare to depart

The operator will be able to:

- 1.1 **A: Obtain (recite), weather conditions, forecasts, and evaluate hazards to navigation and other environmental factors...**
B: assessing if conditions are favorable for the voyage for length/time of trip.
- 1.2 **A: Put on a life jacket...** *B: ensuring it is serviceable, fits properly, and is appropriate for the boat/activity.*
- 1.3 **A: Confirm all others on the craft put on their life jackets...** *B: ensuring life jackets are serviceable, fit properly, and are appropriate for the boat/activity.*
- 1.4 **A: Inspect craft systems and safety equipment...** *B: by completing a pre-departure checklist noting state, federal, and manufacturer requirements for the intended voyage and weather.*
- 1.5 **A: Prepare the craft for departure...** *B: readying equipment (e.g., secured, appropriate load, craft balanced, etc.) and individuals (e.g., safety equipment, plan, etc.) for intended departure.*

Operation #2: Leave a departure point (e.g., dock, slip, shoreline, etc.)

The operator will be able to:

- 2.1 **A: Enter and launch the craft...** *B: using appropriate techniques for the venue (e.g., kneeling on a SUP during departure, etc.), keeping the craft upright with minimal wobbling or loss of control.*
- 2.2 **A: Check for a clear departure...** *B: using a 360-degree scan to confirm a clear path of departure with no conflicts with craft's intended actions and boats/activities in the vicinity and ensuring that departure is not a hazard for others underway.*

Operation #3: Maneuver in close quarters

The operator will be able to:

- 3.1 **A: Propel the craft forward...** *B: while maintaining proper grip and paddle/oar orientation along with trim and balance of the craft.*
- 3.2 **A: Stop the craft...** *B: within two boat lengths, using the appropriate and effective strokes, while maintaining trim and balance of the craft.*
- 3.3 **A: Turn the craft from a stationary position...** *B: 180° to the right and left, within 1-2 boat lengths, based upon a 360° scan of the surrounding area, using appropriate and effective strokes, while maintaining trim and balance of the craft.*
- 3.4 **A: Move the craft sideways (*if applicable)...** *B: 10 feet (to each side), based upon a 360° scan of the surrounding area, using proper techniques with appropriate and effective strokes, while maintaining trim and balance of the craft.*
**This element is applicable when paddling a canoe, kayak, raft, or stand-up paddleboard.*
- 3.5 **A: Propel the craft in a figure of 8 course (*if applicable)...** *B: around markers 3-4 boat lengths apart, based upon a 360° scan of the surrounding area, using appropriate and effective strokes, while maintaining trim and balance of the craft.*
**This element is applicable when paddling a canoe, kayak, raft, stand-up paddleboard, or operating a classic dinghy-type rowboat.*

Operation #4: Operate in open water

The operator will be able to:

- 4.1 **A: Propel the craft forward in a straight line...** B: 15-20 boat lengths using appropriate and effective strokes to maintain a constant heading, while maintaining trim and balance of the craft.
- 4.2 **A: Turn the craft while maintaining forward motion...** B: 90° to the right and left, and based upon a 360° scan of the surrounding area and using appropriate and effective strokes, while maintaining trim and balance of the craft.
- 4.3 **A: Move the craft sideways (*if applicable)...** B: 10 feet (to each side) using proper techniques with appropriate and effective strokes, while maintaining trim and balance of the craft.
**This element is applicable when paddling a canoe, kayak, raft, or stand-up paddleboard.*
- 4.4 **A: Move the craft backwards...** B: 3-4 boat lengths using appropriate and effective reverse strokes while maintaining directional control and while maintaining trim and balance of the craft.

Operation #5: Arrive at a destination (e.g., dock, slip, shoreline, etc.) making first contact

The operator will be able to:

- 5.1 **A: Check for clear approach...** B: using a 360-degree scan to confirm a clear path of arrival with no conflicts with craft's intended actions and boats/activities in the vicinity and ensuring that arrival is not a hazard for others underway.
- 5.2 **A: Arrive at a destination point (e.g., dock, slip, shoreline, etc.) and exit the craft...** B: using appropriate techniques for the venue (e.g., kneeling on a SUP during arrival, etc.), keeping the craft upright with minimal wobbling or loss of control.

Operation #6: Secure the boat (preparing to leave craft unattended)

The operator will be able to:

- 6.1 **A: Secure the craft and equipment...** B: using appropriate techniques and anticipating winds, currents and tides.

Operation #7: Perform general safety/emergency procedures/maneuvers

The operator will be able to:

- 7.1 **A: Avoid capsizing the craft...** B: maintaining proper body position and paddle/oar techniques.
- 7.2 **A: Exit the craft after capsize...** B: using proper body position and contact with the craft and paddle/oar (wet-exit).
- 7.3 **A: Rescue self and the craft...** B: using a proper self-rescue technique.
- 7.4 **A: Avoid cold water shock and hypothermia...** B: by wearing appropriate clothing for the venue and using a documented safety technique.
- 7.5 **A: Rescue a person in the water and capsized craft...** B: using an appropriate assisted rescue technique and standard practice for rescue priorities.
- 7.6 **A: Use essential safety equipment...** B: by ensuring it is available on the craft and appropriate for the trip, follows local, state, federal laws and regulations; and employing according to manufacturer instructions.
- 7.7 **A: Propel an appropriate course...** B: using information provided by navigational aids (e.g., charts, buoys, landmarks) and hand/whistle signals.
- 7.8 **A: Avoid collisions...** B: by maintaining a proper lookout, assessing potential hazardous situations and taking early and decisive action, while maintaining trim and balance of the craft.

* * * * *

Origin and Development of EDU-2, Human Propelled Standard

This is the first publication of EDU-2. It is the work of the On-Water Education Project Technical Committee.

* * * * *

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Appendix D: Sailing Skills ANS

Following is the *On-Water Recreational Boating Skills Standard – Sail*¹⁴ also known as the “Sailing Skills ANS.” The Sailing Skills ANS went into effect on May 25, 2017. Since this American National Standard serves as the primary source document for the design, development and implementation of entry-level recreational sailboat instruction, it is recommended that a copy of the original ANS be included with course or instructional materials. This will help ensure those who design or deliver instruction, as well as students receiving instruction all share the same starting point for understanding the content of the ANS.



To download a free copy of the Sailing Skills ANS, visit: www.usnows.org.

¹⁴ The title of the Standard is *On-Water Recreational Boating Skills Standard – Sail*, however The American Boat & Yacht Council has titled the American National Standard as *EDU-3 Skill-based Sail Boat Standard* to fit within its categorization system for standards. Both titles are synonymous and may be used interchangeably in this document.



EDU-3

**On-Water Sail Standard
On-Water Education Project Technical
Committee**

The ABYC Standards and Technical Information Reports for Small Craft are the product of a consensus of representatives of government, industry and public sectors. It is intended solely as a guide to aid manufacturers and the marine community in the design, construction, equipage and maintenance of small craft.

ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the standards and Technical information reports.

EDU-3

SKILLS-BASED SAILBOAT STANDARD



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EDU-3 Skills-based SailBoat Standard

National System of Standards for Recreational Boat Operation

Title: On-Water Recreational Boating Skills Standard – SAIL

Purpose: To establish the national consensus-based standard for use by course providers for course design and student assessment to raise the overall level of quality, availability and consistency of entry-level on-water, skills-based instruction in recreational sailboat operation.

Scope: This is the core voluntary standard designed to apply to entry-level SAIL on-water skills-based courses in the U.S. states and territories and District of Columbia and function within a national system of standards for recreational boat operation.

SAIL
Domain of application Boat Characteristics: Small keelboat or sailing dinghies to include daysailers, centerboard/daggerboard boats, or multihulls at a maximum of 26 feet with tiller steering and with no auxillary power in operation Wind/Water Conditions: wind 10 knots or less; maximum 12 knot gusts; waves 2 feet or less Operation Conditions: Daytime with no restricted visibility or threatening weather
Stages of entry-level recreational boat operation NOTE: For those recreational boat operations where the boat is underway, individual skill-based standard elements in this On-Water SAIL Standard are to be accomplished in accordance with any aids to navigation, navigational rules, and any regulations applicable to the location in which the skill is being executed.

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Operation #1: Prepare to depart

The operator will be able to:

- 1.1 **A: Determine suitability for departure...** *B: using information gathered about weather conditions, hazards to navigation and other environmental factors relative to departure time and duration of trip.*
- 1.2 **A: Put on a life jacket...** *B: ensuring it is appropriate for the boat/activity, sized correctly, serviceable, and adjusted to fit properly.*
- 1.3 **A: Confirm that all crew and passengers put on their life jackets...** *B: ensuring the life jackets are appropriate for the boat/activity, sized correctly, serviceable, and adjusted to fit properly.*
- 1.4 **A: Board and move about the sailboat...** *B: maintaining balance while keeping boat reasonably stable (e.g., minimal rocking) while boarding and distributing persons/gear appropriately.*
- 1.5 **A: Inspect the sailboat...** *B: using a pre-departure checklist to confirm a safe platform and verify required equipment is on board.*
- 1.6 **A: Rig sails and lines...** *B: following rigging procedures for specific boat, ensuring sail controls are operational, and using proper knots.*
- 1.7 **A: Communicate safety-related information to others on board....** *B: briefing passengers and crew prior to departure (e.g., location of safety items, key safety concerns, anticipated weather and water conditions, expected behaviors, rescue procedures, etc.).*
- 1.8 **A: Ready the sailboat (and crew if applicable) for departure...** *B: positioning boat properly using lines/fenders (if applicable), considering wind and current and communicating departure plan (if applicable).*

Operation #2: Leave point of departure (e.g., dock, mooring, shoreline, etc.)

The operator will be able to:

- 2.1 **A: Secure positions of rudder and centerboard (if applicable)...** *B: adjusting centerboard and rudder for departure, ensuring neither comes in contact with the ground or objects in the water.*
- 2.2 **A: Raise the sails....** *B: positioning boat correctly relative to the wind and conditions (e.g., current), using appropriate sail raising techniques, and maintaining control of the boat and sails throughout.*
- 2.3 **A: Get underway and start sailing...** *B: checking for clear departure, pushing or turning boat in appropriate direction and coordinating sails and tiller adjustments to get boat under control.*

Operation #3: Maneuver in close quarters

The operator will be able to:

- 3.1 **A: Turn the sailboat in a 360-degree circle...** *B: using proper tiller, sail, and weight positioning, and turning within a distance of four boat lengths.*
- 3.2 **A: Turn the sailboat out of a head-to-wind position (i.e., get out of irons)...** *B: getting boat sailing again on intended tack, properly adjusting sails and tiller.*

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Operation #4: Operate in open water

The operator will be able to:

- 4.1 **A: Steer the sailboat in a straight line (hold a steady course)...** B: using sail trim and tiller and adjusting the boat's heading for changes in the wind (speed or direction) to maintain course within +/- 10 degrees for 10 boat lengths.
- 4.2 **A: Place the sailboat in the safety position (or heave to if applicable for boats with two sails) and then resume sailing on a specific tack...** B: using proper control of sails and tiller.
- 4.3 **A: Turn the sailboat away from the wind...** B: adjusting sails and tiller and communicating to crew if appropriate.
- 4.4 **A: Turn the sailboat toward the wind...** B: adjusting sails and tiller and communicating to crew if appropriate.
- 4.5 **A: Slow and then accelerate the sailboat maintaining constant heading...** B: adjusting sails and tiller.
- 4.6 **A: Tack the sailboat...** B: using proper sail control, tiller movement, and body movement; and communicating to crew (e.g., 2-part command), if appropriate.
- 4.7 **A: Sail the boat upwind (i.e., close-hauled or on a shallow close reach)...** B: using proper sail trim and tiller control.
- 4.8 **A: Sail the boat on a reach (across the wind; i.e., deep close reach, beam reach or shallow broad reach)...** B: using proper sail trim and tiller control.
- 4.9: **A: Sail the boat downwind (i.e., on a deep broad reach or run)...** B: using proper sail trim and tiller control.
- 4.10 **A: Sail directly downwind...** B: avoiding an unintentional jibe for 10 boat lengths.
- 4.11 **A: Jibe the sailboat...** B: using proper sail control, tiller movement, and body movement; and communicating to crew (e.g., 2-part command), if appropriate.

Operation #5: Arrive at destination (e.g., dock, mooring, shoreline, etc.) making first contact

The operator will be able to:

- 5.1 **A: Ready the sailboat for arrival...** B: using appropriate boat position relative to arrival point (e.g., dock, mooring, shoreline, etc.), sail configurations, and docklines/fenders (if applicable), taking wind and current into consideration.
- 5.2 **A: Secure positions of rudder and centerboard (if applicable)...** B: adjusting centerboard and rudder for arrival, ensuring neither comes in contact with the ground or objects in the water.
- 5.3 **A: Bring the sailboat to a stop at a specified location...** B: checking for a clear approach, turning boat in the appropriate direction and using proper control of tiller and sails (if applicable) to arrive smoothly.
- 5.4 **A: Lower the sails...** B: positioning boat correctly relative to the wind using appropriate sail lowering techniques and maintaining control of the boat and sails throughout.

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Operation #6: Secure the boat (preparing to leave craft unattended)

The operator will be able to:

- 6.1 **A: Secure the sailboat...** B: using appropriate lines, knots, and proper fender positioning (if applicable), allowing for possible changes in wind, current and tide.
- 6.2 **A: Ready the sailboat to be left unattended...** B: stowing properly all equipment/gear, lines, and sails.
- 6.3 **A: Get off the sailboat...** B: keeping the boat reasonably stable (e.g., minimal rocking) while offloading persons and gear.

Operation #7: Perform general safety/emergency procedures/maneuvers

The operator will be able to:

- 7.1 **A: Depower the sailboat quickly...** B: adjusting sails and tiller appropriately to control the boat.
- 7.2 **A: Avoid collisions...** B: by maintaining a proper lookout, assessing potential risk of collision and taking early and substantial action.
- 7.3 **A: Accept a single line or side tow...** B: maneuvering safely for at least 20 boat lengths.
- 7.4 **A: Return to man overboard (MOB)...** B: using a suitable method to maneuver boat (e.g., Figure-8, Quick Stop, Quick Turn) and stopping the boat at a reasonable distance from mob (e.g., arms' reach for sailing dinghy; ½ boat length for keelboat) in a reasonable period of time for the situation (i.e., boat size/configuration, wind/water conditions).
- 7.5 **A: Recover a capsized sailboat...** B: using proper techniques to return the boat to an upright position, re-enter boat, and ready boat for sailing.*†

*Note: This skill applies to boat types that allow for unaided capsized recovery and re-boarding without assistance

†Note: Persons with disabilities may require assistance to complete this skill

Origin and Development of EDU-3, Sail Boat Standard

This is the first publication of EDU-3. It is the work of the On-Water Education Project Technical Committee.

ABYC technical board rules provide that all reports, including standards and technical information reports, are advisory only. Their use is entirely voluntary. They represent, as of the date of publication, the consensus of knowledgeable persons, currently active in the field of small craft, on performance objectives that contribute to small boat safety.

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Appendix E: Integrating TSD Information within Education Provider Materials

Education providers are encouraged to use the information contained in this TSD to support the development and implementation of their recreational boating safety education programs. The following guidelines are provided to ensure appropriate use of the TSD content within program materials.

Provide appropriate credit for direct quotes. The information contained within this TSD is copyrighted. Therefore, when taking direct quotes from the TSD, credit the source of the information within your materials. For example:

- This TSD is copyrighted by the United States Sailing Association (US Sailing); the USCG grantee behind its development. Use a statement such as the following to provide appropriate credit when directly quoting from the TSD:

Source: Using American National Standards to Design and Deliver On-Water, Skills-Based Instruction for Safer Boating: Technical Support Document for the Instructional Approach Standard. Produced in part through USCG grant funds to develop national on-water skills-based standards. ©2018 United States Sailing Association.

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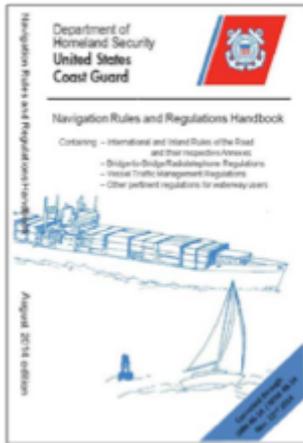
Follow requirements for appropriate use of organizational logos. Organizations have strict requirements for the use of their logos. Avoid using logos from any organization involved in the NOWS Program, or identified in this TSD unless such use is in full compliance with any terms and conditions set forth by those organizations. This includes the USCG, US Sailing, ABYC, NOWS, and Think First Serve.

Tailor fonts and colors to fit organizational branding. It is appropriate to format text, use font style or type sizes that are consistent with organizational color codes, style guides or branding when describing TSD content in course materials.

Appendix F: Additional Resources

This appendix contains resources that may be helpful in the design and implementation of skills-based instruction in entry-level recreational powerboat operation.

Book: The U.S. Coast Guard Navigation Rules and Regulations Handbook.



For those recreational boat operations where the boat is in motion (underway), operator skills-based elements in the skills-based ANSs are accomplished according to aids to navigation, navigational rules, and regulations applicable to the location in which the skill is being performed.

This resource contains all the current information about the Navigation Rules and Regulations boat operators must be able to conform to when operating a recreational boat. Use it to help ensure instructional programming delivers skills that include understanding when and why operators should use the different skills acquired.

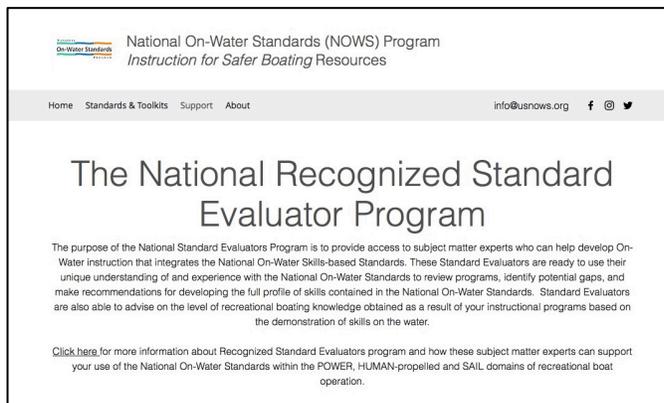


To download a copy of the manual, visit the U.S. Coast Guard's website at: www.navcen.uscg.gov/?pageName=navRulesContent.



Please note: Navigation Rules are now incorporated into 33 CFR (Electronic Code Of Federal Regulations) Chapter I, Subchapter E, which can be accessed at: www.ecfr.gov.

Website: The National Recognized Standard Evaluator Program.



This resource identifies a group of subject matter experts that course designers can access to help develop On-Water instruction that delivers the skills identified within the National On-Water Standard for recreational boat operation skills. Subject matter experts participated in an intensive training program that provided them with a unique knowledge and understanding of the ANSs. Use this resource to help ensure your instructional program delivers the skills and outcomes identified in the ANSs.

Included in the Registry are the names, contact information, and a short biography, for each of the subject matter experts. This group of people can provide coaching on the use of the standard to develop on-water instructional programming.



To access the National registry, visit: www.usnows.org.

Website: ABYC (The American Boat & Yacht Council).



The American National Standards Institute (ANSI)-approved process used to complete the approval and publication of the Standards as an American National Standards is owned by ABYC, an approved Standards Development Organization (SDO).



For further information about ABYC or the process, please visit: www.abycinc.org.

Appendix G: Glossary of Terms

This Glossary provides definitions and descriptions of key terminology used within the on-water recreational boating skills American National Standards (ANSs) and associated Technical Support Documents (TSDs). The following sources were consulted when defining the key terminology: The American Sailing Association's *Sailing Made Easy*; *Bowditch Knight's Seamanship, Start Powerboating Right!*; *Naval Ship Handling (Crenshaw)*; *The Oxford Companion to Ships and the Sea*; *Powerboat Handling Illustrated*, and US Sailing's *Learn Sailing Right – Beginner*.

2-part command. A communication given by the skipper to the crew, in which some action may be expected on the part of the crew. Part 1 is the preparation and part 2 is the execution; e.g. "Ready About" and "Helm's A-Lee" or "Prepare to Jibe" and "Jibe-Ho."

Abeam. Off the boat at right angles to its centerline.

Aft. Toward the stern or behind the boat.

Americans with Disabilities Act (ADA). Passed in 1990, the ADA prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, public accommodations, commercial facilities and transportation (source: www.ada.gov/2010_regs.htm).

Apparent wind. The combination of true wind and the wind effect of motion as felt aboard a moving boat.

Astern. Behind the stern.

Avoiding collisions. Any action taken in this skill takes place in accordance with international or inland rules or special regulations related to the body of water involved. This message is emphasized for this particular standard even though all standards take place according to navigation rules.

Beam. (1) The width of the boat at its widest point; (2) The region of the boat's sides halfway between a bow and stern.

Beam Reach. The point of sail where the wind is abeam of the boat.

Bear away. To turn the boat away from the wind, also known as "fall off."

Bearing. The horizontal direction of a point not on the vessel with respect to the vessel or to the compass; expressed in degrees.

Beginner. A person who has begun a course of instruction or is learning the fundamentals.

Boat. The vessel under operation.

Boat length. The length of the boat the operator is aboard. Often used to judge distances the boat has traveled.

Boom. The spar that supports the foot of the mainsail.

Boom vang. A sail control, either rigid or in block and tackle form, used to hold down the boom or control the twist in the leech of the sail.

Bow. The forward part of the boat.

Broad Reach. The downwind point of sail between a beam reach and a run.

Burying the bow. When the entire bow (to the shear line) goes below the level of the surrounding water, whether into a wave or a trough. Water may or may not enter the boat burying the bow.

By the lee. Sailing on a run with the wind on the same side as the mainsail.

Cavitation. When low pressure along the leading edge of the propeller causes the formation of bubbles (low pressure steam) resulting in loss of thrust and metal erosion to the propeller and other propulsion components. Differs from Ventilation.

Centerboard. A device that pivots down from the bottom of the boat to provide lateral resistance.

Chine. The intersection of the bottom of the hull with the side of the boat.

Class. A specific occasion when students meet with an instructor to learn a particular topic. A class, sometimes referred to as a *lesson*, may stand on its own or be part of a larger course of instruction (see *Course*).

Cleat. A fitting used to secure a line under load.

Clew. The aft lower corner of the sail (between the leech and the foot)

Close-hauled. The upwind point of sail where a boat sails as close to the wind as possible.

Close reach. The upwind point of sail between close-hauled and a beam reach.

Cockpit. The area of the boat, usually recessed into the deck, from which the boat is steered or sailed.

Course. (1) The intended steering direction; (2) A series of specific learning experiences such as lectures or training sessions focused on a specific topic. A course is designed to accomplish the acquisition of a defined level of knowledge and skills associated with the specific topic. A course contains a framework of specific goals and objectives for learning experiences individuals will engage in to transfer knowledge and/or skills. It may stand on its own or be part of a larger curriculum. Multiple courses are used when the goals and objectives of a curriculum are too large in scope to be accomplished by one course.

Crew. People who have duties aboard or assist in the operation of a vessel.

Cruising speed. A speed for a particular boat usually somewhat below maximum that is comfortable and economical and not necessarily with wide-open throttle. Three-quarter throttle often provides an acceptable balance of speed and fuel efficiency.

Cunningham. A type of downhaul used to tension the luff of a sail.

Curriculum. A high-level plan or overarching framework for all the experiences individuals will engage in as part of their education. A curriculum identifies WHAT is to be learned and takes into account the needs of the individual learner, the domain of knowledge and skill, and the needs of society overall.

Daggerboard. A device that lowers vertically down from the bottom of the boat to provide lateral resistance.

Deck. Generally horizontal surface that encloses the top of the hull.

Downhaul. A line used to tension the luff of the mainsail by pulling down the boom at the gooseneck.

Downwind. In the direction toward which the wind is blowing.

Emergency Action Plan. An emergency action plan (EAP) is a written document required by particular OSHA standards. The purpose of an EAP is to facilitate and organize employer and employee actions during workplace emergencies. (Source: <https://www.osha.gov/SLTC/etools/evacuation/eap.html>)

Emergency mode (stop). To stop a boat quickly for safety reasons. Synonymous with ‘panic stop’ or ‘immediate stop.’

Entry-level. The proficiency reached by a person who has successfully completed an appropriate amount of beginner instruction, or has achieved a sufficient level of experience, to be ready to pursue (or ‘enter’ safely into) the associated activity.

Equipment. All items that are not fixed or permanently attached to the boat, including fenders, boathook, anchor and other items useful for departure, operation, arrival, or safety.

Erratic. Uneven, irregular or unpredictable movement.

Essential Eligibility Criteria (EEC). The requirements a student needs to meet in order to participate in a learning experience. Examples of EEC include: weight, height, ability to follow instructions, capacity to independently communicate, etc.

Experiential education. An approach to education that involves students engaging in the process of learning through hands-on activity and direct experience, followed by focused reflection, to develop knowledge, skills, attitude, judgment, values, etc., associated with the learning goals and objectives.

Foot. The bottom edge of a sail.

Formative feedback. The act of providing students with feedback during instruction about their current level of skills acquisition and to target additional learning needs. It provides opportunities to adjust learning while there is still time to redirect toward a more successful outcome.

Forward. Toward the bow.

Furl. To stow a sail on a spar or a stay.

Give-way vessel. Under the Navigation Rules, the vessel that is obligated to adjust its course or speed to avoid collision with another vessel.

Goal. The intended outcome of an instructional approach. What the student will be able to know, do or believe as a result of participating in instruction.

Gooseneck. An articulated fitting that connects a boom to a mast.

Halyard. A line used to raise and lower a sail.

Head. The top corner of a sail.

Head down. To steer away from the wind, bear away, fall off.

Heading. The direction the boat is pointing at any given time; sometimes expressed as *compass heading*.

Head to wind. A boat's position when its bow is pointing directly into the wind.

Head up. To steer the boat toward the wind.

Heave-to. To slow a boat significantly by setting the sails and rudder in opposition.

Heel. (of a boat) to lean sideways under the pressure of the wind on the sails.

Helm. The location and/or mechanism by which a boat is steered (e.g., wheel, tiller, handle bars, etc.).

High speed. The minimum speed at which a boat will be on plane.

Hull. The watertight structural shell of a boat.

Idle. The lowest revolutions per minute (RPM) at which an engine will maintain continued operation. The manufacturer generally sets this through the use of a detent in the throttle or the lowest position at which the throttle can be set.

Idle speed. The speed of the boat through the water when continuously in gear at the lowest RPM possible.

In irons. The state of a sailboat that is head to wind, having lost headway with the sails luffing.

Instructional approach. The overall manner of preparing, supporting, delivering and following up on the way in which knowledge, skills, etc., are passed on. Includes infrastructure and support, the people involved, and the environment in which it happens, as well as the actual act of delivering instruction before, during, after a learning experience.

Jib. A triangular sail set forward of the mainmast.

Jibe. To turn the boat so that its stern passes through the wind with the mainsail changing sides.

Keel. The main structural member along the bottom of the boat's hull; on a sailboat, often an appended fin-shaped structure that contains ballast.

Lesson. A specific occasion when students meet with an instructor to learn a particular topic. A lesson, sometimes referred to as a *class*, may stand on its own or be part of a larger course of instruction (see *Course*).

Leeward. The direction, or side of the boat, away from the wind.

Life jacket. A flotation device intended to be worn by an individual that meets the standards set forth in the Code of Federal Regulations as promulgated by the US Coast Guard.

List. Defines the lateral orientation – side to side - relative to the water's surface. Tilting of the boat due to internal forces.

Luff. (1) *n.* The forward edge of a sail; (2) *v.* The fluttering of a sail when the boat is too close to the wind, g. "the sail is luffing;" (3) *v.* To head up into the wind so that the sails are depowered, "luff up."

Mainsail. The sail attached to the aft side of the mainmast.

Maintain proper lookout. Making a make a full appraisal of the situation and of the risk of collision using sight, hearing and all other available means appropriate in the current circumstances or conditions. Called “Look-out” in Rule 5 of the Navigation Rules and Regulations Handbook.

Making way. When a boat is being propelled through the water by sail, machinery, or oar.

Maneuver in close quarters. To operate a boat in a confined area; typically requires operation at slow speed (e.g., in a marina or narrow fairway).

Mast. A fixed vertical spar that holds up a sail or sails.

Minimum control speed. The slowest speed at which an operator can effectively control the heading of the boat using intermittent application of power, steerage and headway.

Navigation rules. Rules for the operation of a boat while on the water, whether underway or at anchor, and designed to prevent collisions.

Neutral. The engine / propulsion unit are not in gear or engaged.

Normal operating speed. The speed at which the boat is operated for optimum performance and efficiency. The actual speed is dependent upon design of the hull (*see planing speed*).

No-sail zone. The zone in relation to the wind where the sails cannot generate power; sometimes called the “no-go zone.”

Novice. A person who is new to an activity and typically has little or no knowledge or skills related to that activity.

Objectives. Specific end results students will achieve that collectively accomplish the overall goal for the unit of instruction. They provide guides to selecting content, designing the instructional strategy and preparing the materials to engage students in he instructional activities.

On-water instruction. A course or program of instruction that is boat-based and on the water for skills development. Instruction takes place primarily in the natural setting of the boat (on or near the water) with experiential learning as the primary method of delivery.

Outhaul. A line used to tension the foot of the mainsail.

Passengers. People or occupants in a boat who are not involved in its operation.

Performance Objectives. Specific focused outcomes to be achieved as a result of engaging in a learning experience. Objectives may identify the concrete knowledge, skills, attitude or behaviors a student will be able to demonstrate as a result of the learning experience.

Planing speed. The speed at which a planing hull is supported by dynamic buoyancy generated by its forward speed. The boat is no longer operating in the displacement or semi-displacement mode.

Planing stop. The stop used to bring a planing hull to a stop with the least amount of movement or advance along its original track while avoiding having water enter the boat over the transom. This applies only to planing hulls.

Point of sail. The direction a boat is sailing relative to the wind. There are five points of sail: Close-haul (or Close-hauled), Close Reach, Beam Reach, Broad Reach, and Run (or Running).

Porpoising. The motion of the bow of a boat bobbing up and down due to its fore and aft trim and resulting interaction with the water. Not wave generated.

Port. 1. A harbor; 2. The left-hand side of a boat when facing forward.

Prerequisites. Something that is required before a student can participate in a learning experience. For example, a prerequisite for attending a course might be a previous learning experiences attended, a set of skills previously acquired, or knowledge previously learned.

Proficiency. A description of the behaviors and actions that demonstrate the level of competence, accomplishment or skill in operating a recreational boat.

Program. A collection of courses designed to accomplish a comprehensive set of goals and objectives too large to be accomplished by any one course of instruction.

Propulsion unit. The mechanism that causes a boat to move (e.g. propeller, jet, sail, paddle, oar).

Radius of turn. The distance a boat offsets laterally during 90 degrees of turn; usually measured in feet, yards, or meters.

Rate of turn. The change in vessel heading per unit of time, typically measured in degrees per minute.

Rubric. A mechanism used to define and describe different levels of proficiency for a particular skill in behavior and action. Along with distinguishing successful from unsuccessful demonstration of a skill, rubrics identify performance that needs improvement to obtain targeted successful level of proficiency.

Rudder. The movable appendage attached to a boat under the water and with which it can be steered. A rudder could be attached to a post underneath the boat, or hung on the transom with fittings called pintles and gudgeons.

Rules of the road. The collegial expression often used to refer to *Navigation Rules*. This is the term used to identify the general statement governing the application of those on-water standard elements for which the boat is making way.

Run. The point of sail on which the wind is directly astern.

Safety Position. When a sailboat has essentially stopped making forward progress (may be drifting as a result of wind or current) on a close reach with the sail(s) luffing and the mainsail eased. This is a maneuver commonly used by sailing dinghies.

Sheet. A line used to control the alignment or angle of a sail relative to the boat and the wind.

Skill. The learned capacity, aptitude or ability to do something.

Stand-on vessel. Under the Navigation Rules, the vessel that is obligated to maintain its course or speed, unless it is apparent that the Give-way vessel is not taking early and substantial enough action to avoid the collision.

Standard. The definition of the qualities or characteristics used to judge how well something is accomplished. Skills standards for entry-level, recreational boat operation identify, a) the skill individuals are able to demonstrate; and b) the condition that is fulfilled when the skill is demonstrated to an acceptable level of proficiency. The Instructional Approach Standard identifies a) the characteristic, and b) the criteria of the instructional approach.

Starboard. The right-hand side of the boat when looking forward.

Steady course. Maintaining the boat's intended direction.

Stern. The aft part of a boat.

Student-centered instruction. An approach that puts the focus of attention on the student and tailors delivery of instruction to fit the distinct learning needs, preferences and interests of the individual student, or group of students. This approach is often counter to those designed to work best for the education provider (e.g., efficiency and mass production) but that might not be the best approach for learning the particular topic.

Summative feedback. The act of providing students with feedback at the conclusion of a learning experience about their overall level of proficiency obtained as a result of participation. It is used to determine whether a student has successfully acquired the skills associated with the specific learning goals and objectives of the learning experience and to identify future opportunities to continue learning.

Tack. (1) *n.* The forward lower corner of a sail; (2) *v.* To change course by turning the bow of a sailboat through the wind; (3) *n.* A designation according to which side of the boat the wind is blowing onto. The boat is said to be "on a port tack," or "on a starboard tack." For the purposes of the Navigation Rules, when on the *Running* point of sail, the tack is determined by the side of the sailboat that is opposite the mainsail.

Telltale. A short length of light yarn or similar material attached to a sail to indicate the flow of air across it and thus the state of the sail's trim.

Three points of contact. Includes contact with the boat by any three of the following: individual hand, individual foot or buttocks.

Throttle. The mechanism used to control the engine's revolutions per minute and used to control the speed of the boat.

Tiller. A lever used to control the angle of the rudder and thereby steer the boat.

Track. The path that the boat has taken over the ground.

Traveler. A car and track system that allows the main sheets attachment point to the deck to be moved aftwardships.

Trim. The relation of a boat's fore and aft orientation to the water's surface; e.g., level trim; or bow up or down; or stern up or down. Also, to adjust the angle of outboard motors or stern drives.

Underway. When a boat is not at anchor, or made fast to the shore, or aground.

Upwind. In the direction from which the wind is blowing.

Ventilating. The drawing of air from the surface into the propeller blades disrupting the water flow over the blades causing a sudden loss of thrust and increase in engine RPM. Often occurs in a turn of a planing hull where the propulsion unit moves too close to the surface due to the boat's heel.

Windward. Toward the wind.