CSC Sailing Ground School Teaching

This is a guidebook for teaching Ground School on Saturday morning lessons.

Objectives

1. Use the time when members are waiting for lessons on Saturday productively
2. Introduce new members to the Club
3. Short 10-15 minute sessions so that members waiting for lessons can participate and can get on boats when they are available. Also students arrive at different times, so they should be able to join in when they get to the Club.

This will be fluid and will have to integrate with the in-the-moment availability of on-the-water instructors. The idea is to keep members engaged and learning while they are waiting for lessons.

Lessons

Not necessarily in this order. Be fluid, depending on the students waiting and what their experience is.

1. Introduce New Members to the Club
2. Operating Rules for Novice and Junior sailors
3. Inspect a Bahia or a Quest
4. Rig a Bahia or a Quest full main sail
5. Reef a Bahia or a Quest
6. Put a boat in the water/take a boat out of the water
7. Tiller and weight management on land and tacking
    a. How to steer the boat with the tiller
    b. Where to sit and how to hike out
    c. Use of the tiller extension
    d. Tacking, changing hands on mainsheet and tiller
8. Gybeing – Land Demonstration
9. Anchoring – Land Demonstration
10. Right of Way Rules
11. Points of Sail
12. Knots

Introduce New Members to the Club - Basic orientation

1. We're structured as a non-profit cooperative
    a. Started in the 1940s, in present location since the 1970s
    b. The most economical way to learn sailing and sail
    c. This is because almost everything at the Club is done by volunteers (except for Day Leaders)
    d. Every member must do 2 volunteer hours a quarter doing something useful for the Club
        i. Show up and ask the Day Leader to put you to work
        ii. Open Houses – we need a lot of people
        iii. Teaching, after you have a rating (including Novice)
        iv. Other things, like boat repair and more specialized stuff
    e. An additional 10 hours gets you a free quarterly membership
    f. Volunteer-run has advantages and disadvantages. It's not for everyone. Next door is another inexpensive option if we don't work for you.
2. Operating Hours
    a. We're open every day throughout the year
    b. 9 am to ½ hour before sunset on weekends, noon to ½ hour before sunset on weekdays
    c. Club may be close because of low tides or weather. See the website.
3. Rating System
    a. Your rating determines what boats you can take out when and where
    b. Dinghy Ratings:
        i. Novice – In the Novice Area with Day Leader approval (Day Leader may limit Novice sailing based on weather or tides). By yourself or with at most one other person who must be a Club Member (doesn't need to be rated).
        ii. Junior – In the Junior Area. You may take anyone out, Club member or not, up to the boat capacity. The Day Leader may restrict sailing. The club may close due to weather or low tides.
        iii. There are advanced ratings – see the WebSite.
    c. How you get the ratings
        i. Written Test – same test for Novice and Junior. 21 questions, multiple choice. You can look at it and study for it in the Clubhouse. It's closed book when you take it, which you can do any time the Club is open. The Day Leader can administer it. You need to get 17 right to pass. If you don't pass, you won't be told what you got wrong, and you'll have to wait a day to take it again.
        ii. Rigging Test – Inspect a boat in the yard, find and fix any problems. Put the boat into the water with the help of an inexperienced person. Rig full main sail for conditions. Reef. Oral quiz on sail controls, boat parts, etc. Knots.
        iii. Practical Test
            1. Novice – Launch the boat by yourself, tacks, gybes, capsize and anchor, recover and retrieve anchor, dock.
            2. Junior – 10 kts of wind or more. See website for details

4. Who's in Charge?
    a. The Club Operating Rules govern
    b. The Day Leader is in charge of daily operations, who can do what and when, and can suspend a member if they don't follow the rules
    c. The Port Captains supervise the Day Leaders and set operational policy, such as when to shut the Club down for low tides
    d. The Executive Committee (Excom) supervises everything and handles problems that the Day Leaders cannot
5. Operating Rules for Novices and Juniors
    a. When you can sail
        i. Club must be open
        ii. Day Leader must be on duty and decide that it's OK (could be different for Novices and Juniors)
        iii. Rescue Skiff must be in the water and operable
        iv. Be back by "Dock Time" posted in the Club House
    b. Where you can sail
        i. Novice Area
        ii. Junior Area
    c. How many people can you take out?
        i. Novice – yourself and at most one other person, who must be a Club member (no rating required)
        ii. Junior – anyone up to the capacity of the boat
6. Other Programs
    a. Keelboat – every Wednesday at 6pm J-Dock
    b. You must be a Junior Dinghy skipper to take keelboat lessons
    c. Windsurf
    d. Kayak and stand-up paddleboard available for member use in Junior area subject to Day Leader approval (no rating or instruction program for these)
7. Email lists

    Many announcements are made on these lists. A good place to ask questions. See website for how to sign up.

Inspect a Bahia or a Quest

1. Required equipment
    a. Paddle
    b. Anchor
        i. Is it ready to deploy?
        ii. Is it secured so that it won't deploy unless you want it to?
2. Cotter rings OK?
   Check all rigging connections to make sure they are secure (where two parts of the boat come together). There are several mechanisms, but most are cotter rings. They should not be corroded or spread open (they'll work their way out easily if they are).
3. Walk around and inspect boat, bow to stern on starboard, then stern to bow on port
    a. Bow line
    b. Masthead float
    c. Side stays (shrouds) and spreaders
    d. Jib sheet stopper knots
    e. Hiking straps
    f. Righting line and bungie on Bahia
    g. Outhaul and reefing line on aft end of boom
    h. Make sure tiller extension is secure (this is the part of the boat that breaks most often)
    i. Same thing on port side
    j. Centerboard : On Bahia, note if there is a slip knot on the uphaul, as you'll have to un-do it to lower the centerboard
    k. On a Quest, tighten the forestay and the jib halyard. **These must both be loosened when putting the boat into the yard.**
4. Drain boat and insert drain plug

Put a Boat in the Water

1. Assume a knowledgeable person and a helper who knows nothing. Explain to the helper what the objective is and what they need to do.
2. The objective is to get the boat into the water spinning it 180 degrees without hitting the rigging on the crane
3. Connect the sling to the boat and run the bowline to the stern of the boat in a way that won't get caught in the trailer. When the boat is raised, watch the sling lines carefully to make sure they're functioning and not catching anything. If the boat tilts forward, no problem. If it tilts aft, it's a problem as the mast may hit the crane. Drop it and figure out what's wrong. Get help.
4. Put the least experienced person on the crane. Their job is to operate the crane and control the boat with their hand on the stern of the boat until the other person gets into position on the dock or on the ramp. They'll push the boat out parallel to the dock but not so far that they can't control it until the other person is in positon.
5. The person with the bowline first gets the trailer out of the way. Then they go onto the dock or the ramp and line up with where the boat is pointing, that is way down the dock or the ramp. Then there's a "tug of war" between the person on the bowline and the person with the crane line to stop the boat turning. The person on the crane lets go of the boat at this point.
6. After the boat is stable the person on the dock/ramp positions the boat parallel to the sea wall to lower the boat into the water.
7. Step onto it carefully (especially for a Bahia). Get the centerboard down first to get stability. If the tide is low and it hits the mud, bring it up an inch or two.

Take a Boat out of the Water

1. A two person job.
2. Same objective as putting it in the water.
3. Raise the rudder and connect the sling to the boat. Raise the centerboard last for better stability. On a Bahia, you may have to put a slip knot on the uphaul to keep the centerboard up. On a Quest, clip the centerboard to the bungie line on the mast.
4. Make sure its lines won't grab anything, and watch the lines carefully as the boat rises.
5. Raise the boat all the way, keeping it off the crane by tensioning the bow line. The person on the crane can pull the crane arm in a bit. If the boat tilts forward, no problem. If the boat tilts aft, it may hit the crane. Lower it and get help. Most likely, there's water in the bilge that will have to be removed before you can raise the boat.
6. The person with the bow line spins the boat counter-clockwise by walking down the dock away from the sea wall and tossing the line into the boat (or into the water, doesn't matter).
7. The person on the crane catches the boat on the stern and pushes the boat around to parallel to the sea wall. In strong winds, they might have to support the port side of the boat against the wind as they do it.

Rig a Bahia or Quest Full Main Sail

1. Set up a boat on land
    a. Point it into the wind
    b. Support the aft end with a cooler and one or more life jackets
2. Mainsail raising sequence:
    a. Make sure these are loose, de-rigged:
        i. Cunningham
        ii. Outhaul
        iii. Vang/Gnav
        iv. Reefing line
    b. Unfurl the sail by unwrapping the mainsheet
    c. Run the main sheet completely loose through the block and make sure the falls are even so that the boom will go all the way out if the sail powers up. Start by lifting it all the way and then fiddling with the falls.
    d. Put the boom on the correct side of the boat. This depends on which side of the mast track the gnav fitting is connected to. The boom should be on that side, otherwise it will block the track, and the sail won't feed into it easily.
    e. If there is a bolt rope, the sail will have to be fed up (ideally but not necessarily by another person). It needs to be held straight so it feeds cleanly into the mast track.
    f. Get in the safe position in front of the mast facing aft.
    g. Raise the main all the way up.
    h. Set the Cunningham, outhaul, and vang/gnav based on conditons (light wind=loose, heavy wind=tight)
    i. If there isn't a pin or hook for the tack, use the Cunningham to hold the tack down. The Cunningham should be in the second grommet from the bottom.
    j. Step out and look at the sail shape (best viewed from the dock). Common problems are the vang/gnav too tight, reefing line too tight, or reefing line wrapped around the boom.

Reef a Bahia

1. Unrig the Cunningham and loosen the vang/gnav.
2. Using the main halyard, lower the mainsail so that the reefing cringle is about 4-6" above the boom.
3. Pull on the jiffy-reef line to pull the boom all the way up to the reefing clew.
4. Raise the sail with the main halyard if necessary.
5. Rig the Cunningham to pull the luff tight.

Reef a Quest

1. Unrig the Cunningham and loosen the vang/gnav.
2. Using the main halyard, lower the mainsail so that the reefing cringle is about 4-6" above the boom.
3. Put the reefing lug into the mast track below the reefing tack.
4. Set the Cunningham through the reefing grommet
5. Tighten the halyard and Cunningham
6. Tighten the reefing line
7. Roll up the sail and "pretty it up" with the reefing ties

Tiller and Weight Management and Tacking on Land

This is for people completely new to sailing to show them how to steer the boat with the tiller, how to tack, and how to use their weight in a comfortable, safe environment. Set the boat up with a cooler and some life-jackets supporting the aft so you can stand there. Point the boat into the wind and raise the mailsail.

1. Show the steering system: tiller, extension, rudder.
2. Demonstrate how you have to hike out and use the extension to control the boat in high wind by yourself or with minimal crew. Have someone balance you on the other side of the boat as you demonstrate this.
3. But say that all of this is a lot at first, and it's perfectly OK to just use the tiller at first and then move on to the extension when you're ready. Or better yet, use the tiller extension but grab it near the tiller. That will make the transition to using the extension easier, and that transition is absolutely necessary for higher winds.
4. Normally, the skipper sits opposite the sail to balance the force of the wind, which tends to lean the boat over (heel) and even capsize it.
5. How to turn the boat left, right, and stop the turn. Light hand on the tiller, as it's easy to over-correct.
6. The exception to the light hand – tacking. The boat can't go higher than 45° to the wind. If you want to go upwind, you have to zig-zag. Every time you zig or zag, it's a tack, You've got to get through a 90° slice of the pie where the sails aren't working. To do that you need forward speed and turning speed, so it's an aggressive use of the tiller:
    a. Prepare the crew "Ready to tack?". Get a response from everyone.
    b. "Tacking" Push the tiller hard toward the sail and get your aft foot over to the other side, but keep the rest of your body still.
    c. WAIT until the sail depowers and the boom starts to come across. You need your weight to balance the sail force as long as the sail is powered.
    d. When the boom comes across, the skipper goes across. NEVER let go of the tiller. Best practice is to pass it behind you, but do whatever works.
    e. Stop the turn when the sail powers up (at least at 90° turn)
7. Demonstrate hiking out and the hiking straps. Make sure someone is balancing you on the other side as you do it. Do a real extreme hike-out if you can.
8. If there are more advanced students, demonstrate how to tack and change hands on both the mainsheet and the tiller:
    a. There are different ways of doing this. Show what works for you, but mention that there are other ways, and the student will have to find the one that works for them.
    b. There are wrong ways of doing this: letting go of the tiller, or letting go of a cleated main.
    c. It's OK to let go of the main provided you uncleat it first.
    d. Show how to do this with the tiller extension

Gybeing – Land Demonstration

This is for students who have had a few lessons and are ready to learn gybeing or maybe have already started doing to.

1. Explain the gybe:
    a. A gybe is not dangerous, it's just less forgiving of poor technique (you'll swim if you screw it up). It can be dangerous if you do it accidentally and/or someone's head is in the way of the boom.
    b. It's best learned in light wind to imprint the mechanics on you in a situation where you won't swim if you don't do it right.
    c. A tack has to be fast, as you have to get through the 90° zone where your sails aren't working. In a gybe, you're powered all the time, so you can take it as slow as you like (and you should while learning it).
    d. Go to a broad reach or a run and stabilize. You don't need your weight out downwind, so you can be in the center of the boat.
    e. Prepare the crew: "Ready to gybe – heads down". Get a response from everyone.
    f. "Gybeing". Get ready to pull the main across by having one hand on the fall. Pull the tiller slowly away from the sail and wait for it to happen. Watch the jib, as it will back-wind just before the main.
    g. When the jib back-winds, you must do two things simultaneously:
        i. Pull the main across to the other side
        ii. STOP THE TURN by moving the tiller a few inches to the other side of center and quickly bringing it back to center. This is the key to a controlled gybe. You have to counter-correct the tiller to stop the turn, but you can't leave it on the other side, or you'll have an accidental gybe in the other direction.
        iii. Move to the other side of the boat. If you don't do the gybe correctly, that is if you don't stop the turn, you will round up and over. To prevent the capsize, you'll have to get a lot of weight out quickly, so this prepares you for it. If you do the gybe correctly, no problem.
    h. Note that if you do this perfectly in light winds, your technique will be fine in heavy winds. There's some fine-tuning, but nothing as important as stopping the turn.
2. Practice on land with a boat pointed into the wind and supported by a cooler with one or more life-jackets
    a. Boat should point into the wind
    b. Tiller is more important than sail, so either don't focus on the sail at all, or have someone move it from one side of the boat to the other to make it more realistic.

Anchoring – Land Demonstration

1. Why to anchor
    a. Problems on the boat
    b. Makes capsize recovery easier
        i. Sail doesn't power up
        ii. Wind won't recapsize the boat
        iii. Boat won't sail away
2. Set up a boat on land
3. Show how to check that the anchor is rigged properly
    a. Ready to deploy
    b. Secured so it won't deploy on its own in a capsize
    c. Line from the anchor goes over the bar at the bow, under it, and is tied *securely* to the strut (double bowline preferred), on the opposite side of the boat from the jib furling line (so there's less to get tangled with)
4. Show how Danforth anchor works – light, but digs into the mud
5. How to deploy
    a. Always on the side of the boat where it's rigged, regardless which side is up after a capsize
    b. Go to the front of the boat, but stay connected to it
    c. Play out the chain and line until it hits the bottom, and then a little more.
    d. Set it and test
    e. Play out the rest of the line
    f. Boat should be pulled into the wind (unless the wind is very light)
    g. You end up with a nice straight line through the fitting on the bow
    h. For a land demo, someone should be the "anchor" – take the anchor and walk it out ahead of the boat to simulate the boat being blown downwind from the anchor.
6. How to retrieve
    a. Move forward of the mast to grab anchor line from mouth (not necessary for JYs) If strength is an issue, attach working end of bow line to anchor line and carry bow line aft
    b. Move aft of shrouds and begin to pull up and in on the anchor line, working in concert with waves
    c. As the anchor releases from the bottom, the boat will bear away onto one tack or the other. Move weight to balance boat and pull in anchor from aft of the shrouds on the windward side.
    d. Clean mud off anchor before pulling completely in.
    e. Once anchor is settled, set in bow and stow neatly for next use.

Right of Way Rules

The rules are complicated, there's a whole book, but the ones that apply in the South Sailing Basin are fairly simple.

1. Roles and responsibilities
    a. The rules apply only to avoid a collision
    b. How do you tell if you're on a collision course?
        i. Constant compass angle to the approaching boat (ranging)
        ii. Sight it over your hull and see if that point changes as you get closer. If it doesn't, you're on a collision course
    c. Stand-on vessel – maintain course and speed. If you try to be a "good guy", you become unpredictable and can cause a collision.
    d. Give-way vessel – make a clear and early change in course to avoid the collision
2. Sail versus Power
    a. Generally, sail has right of way over power
    b. Except when overtaking (any vessel...)
    c. Except when the power vessel is towing (e.g., a windsurfer or a sailboat)
3. Two sailboats
    a. Which tack are you on?
        i. Tack is approximately the side of the boat where is the wind is on (starboard or port)
        ii. Tack is technically the side opposite where the main sail is (to make it crystal clear)
    b. Sailboats on different tacks – Starboard tack has right of way over Port tack. This is arbitrary, it had to be one or the other.
    c. Sailboats on the same tack – Downwind (leeward) has right of way over upwind (windward). Not arbitrary, as in this situation the windward boat has more room to maneuver without tacking or gybeing.
    d. A windsurfer is a sailboat.
    e. BUT a windsurfer in the Novice area might not know what they're doing, might not be paying attention, and might not know the rules. So prudence demands staying away from them. A big problem docking sometimes.
    f. If you're the stand-on boat on a collision course, first call out "Starboard" or "Leeward" and see what the other boat does. Then do what you have to do to avoid a collision.
4. Sailboat and kayak - Trick question, as it's not covered in the rules. Kayaks are more maneuverable than sailboats, but be prudent.

Points of Sail

This is ideally done with a model boat, but it doesn't have to be. You could do it with an eraser or some similar object with a wind direction (from the west on the deck table, for example).

Key points:

1. Point of sail is the angle of the boat to the wind
2. Apparent wind vs. true wind. This is a hard concept. It's easy to explain by the bicycle example. You're peddaling 10 kt. on a calm day, and what do you feel? A 10 kt. headwind. You're peddaling 10 kt. downwind with a 10 kt. and what do you feel? Nothing. The complication is that it's both speed and direction, and vector algebra is required to get it. It might be better not to discuss it unless get have specific questions.
3. There are names for points of sail. The names aren't so important, but each point of sail has an important characteristic. This is a way to explain it
    - Close Hauled – as high as you can go into the wind, about 45° to the true wind
    - Beam Reach – wind coming across at 90°. This is the fastest point of sail.
    - Close Reach – between Closed Hauled and Beam Reach. This is the ideal Slow Sailing point.
    - Broad Reach – the first time you're downwind. The wind is coming over the stern quarter. You'll be maybe 45° to the waves. And you'll recognize it because it gets quiet. When you get the wind behind you, your boat speed cancels some of the true wind, so the apparent wind decreases noticeably.
    - Run – wind dead behind you. A hard course to steer.
4. How the sails work
    - Beam reach and higher – a wing, just like an airplane, with the force perpendicular to the sail. So when you're sailing into the wind, there's a lot of heeling force. On beam reach, the force is more aligned with the direction you're going.
    - Broad reach and lower – a parachute, with half the force of the wing at the same wind speed.
5. For more advanced students
   Demonstrate docking and MOB "from above" using points of sail. A Slow Sailing course (Close Reach) will be 60° to the true wind.

Knots

Students love this. It's not a dry as some of the other stuff and it's very hands-on.

Go over these knots, using the toys in the Clubhouse and explain their uses:

1. Cleat hitch – cleat on the dock near the seawall, and also main halyard
2. Round turn and two half hitches – actually two round turns and two half hitches on a byte, which is how we tie the boats to the rail away from the seawall
3. Figure Eight Knot – stopper for jib sheets, but there are other options
4. Square Knot or Reefing Knot – only for cleaning up the sail after reefing, as it comes undone too easily
5. Bowline – the king of knots, useful for a lot of things, but it can become undone. It has an "off switch".
6. Sheet bend – tie your bow line to the Rescue Skiff's line for a tow, if the Day Leader wants you to. Add some turns or a wrap to make it more secure.
7. Slip knot – useful for securing halyards not under load (e.g., the gennaker halyard holding the jib sail cover)