Stick Raft Engineering Challenge

Materials:
Twigs and sticks from outside
string, wire, rubber bands or yarn
glue (hot glue gun if available)
paper

For this activity, it is done in three different stages:
1. Brainstorming
2. Designing
3. Building/ Testing/Evaluating

1. BRAINSTORMING
- Start thinking about the type of sticks that you want to gather outside for your raft. Do all sticks float whatever their size? Do you want to add a sail to your raft?

- Think about the different challenges you want to set up for your raft. Challenges could include things like keeping afloat the longest, traveling the quickest, carrying the most weight, surviving a small waterfall etc.

2. DESIGNING
- In this stage, you will think about the raft design. Will the raft be smaller or larger in size? Do you want a sail on your raft? What will it look like?
- Try drawing out the raft on paper and think about how you want it to look.
- Decide on how many sticks you need to collect, as well as the stick size, shape, features etc.

3. BUILDING/ TESTING/ EVALUATING

As you build your raft, here are a few guiding points:

- Place two shorter twigs as the bottom base of the raft
- Place the longer sticks on top of the two base sticks, going the opposite direction as the two base sticks.
- Glue all the longer sticks down. Use hot glue gun if possible. If not, allow time for the regular glue to dry.
- Now use twine, wire, yarn or rubber bands—whatever you have chosen to tie the twigs together. Weave in and out of the twigs and go along outside edges.. Tie off ends.
- You can add a smaller twig as the mast and add a triangle piece of paper as the sail if you like.

Now—try float your raft! You can float it in a sink or bathtub. If you have a plastic pool or large container, take it outside and try to float it. Try your challenges!! Can it float with pennies on the raft? With a small toy on it?

During this stage, you might get lucky and the raft may float perfectly the first time—but even if it works, there are always ways to improve it. Build your raft and then test and evaluate it...and then make the adjustments and changes you need to continue to improve your raft. Way to be an engineer!