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# **WATERobot** (AabRobot = آب‌ربات)

## Water Awareness Teaching and Educational Robot

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- **Water** (or “*Aab*” in Persian) is the first word Iranian children learn at school. When it comes to water conservation it is crucial to start educating our kids from this point on the importance of saving one of the Earth’s most valuable resources for posterity.
- **Children** seems to learn better through educational tools and techniques that are presented as games. These days’ children are showing a great interest in intelligent toys and robots.
- **Social Robots** as emerging technologies and intelligent machines are entering our societies. They are recently proven to have great potentials in being utilized as educational tools for various goals and purposes.

# Did you know that kids can make a very important difference towards water conservation?

- **Water education & conservation is globally a critical issue...**
- **Future wars are expected to be on water...**
- **Today's children make our future societies...**
- **Kids can play an important role towards water conservation, by simply starting at home and change the way their families, friends, and classmates use water.**

## 20 Ways Kids Can Help to Save Water:

- When you **wash your hands, don't leave the water running**. Wet your hands and turn the water off. Use soap and lather your hands well, then turn the water on to rinse. Turn off the water completely, then dry your hands.
- **Do the same when you brush your teeth**. Turn the faucet on to get your toothbrush and toothpaste wet, and then again to rinse your mouth and toothbrush. Don't leave the water running while you're brushing.
- **Tell your friends what you're doing and why** and encourage them to do the same.
- **Tell adults when faucets are dripping**.
- Since baths use a lot of water, **take short showers** instead and use only water when you need to rinse.
- Use a wastebasket for used tissues, or things like gum wrappers, paper towels, or even dead bugs or goldfish. Don't flush them.
- A regular shower head uses as much as 7 gallons of water every minute. **Look for a low flow shower head** that has a cut-off valve that shuts off the water flow while lathering your hair or shaving legs. You can then turn the water back on, without it starting off cold again.
- Do you have plants in your house? **When meals are prepared and vegetables or other fresh produce are washed, collect that water and use it to water the plants**.
- In the tank part of the toilets in your house, put several drops of food coloring into the water. **If you see the coloring seeping into the bowl, there's a leak**. Fixing it can save about 600 gallons of water each month!
- Do you like a drink of cold water now and then? Rather than running the kitchen faucet for several minutes to get cold water, **keep a pitcher of water in the refrigerator**.
- **Put a barrel outdoors to catch rain water**, then use that water for things like watering plants or flushing toilets and save hundreds of gallons of water a year!



- In the summertime, **it's fun to play under the lawn sprinkler**. When you do, make sure it's when the lawn is being watered at the same time.
- Do you have other **summer water toys that require a running hose**? These might be fun, but they also waste gallons and gallons of water.
- Is there a **garbage disposal in your kitchen sink**? Then, you know the water has to run into it when you turn on the switch. Instead of doing that and wasting water, why not start composting food waste instead? Collect things like fruit skins and peels, vegetable leaves and stems, and even dead plants and flowers. In a ceramic container, keep them moist and toss them for air once a week. The compost can then be added to a garden like a vitamin for your outdoor plants!
- Encourage the others in your home, and your friends, **not to leave any faucet running**.
- If there is a dishwasher in your house, **encourage everyone to scrape their plates rather than rinse them before loading them into the machine**. It should always be full before turning it on.
- Do you notice that your **toilet handle "sticks" and has to be "jiggled" for the toilet to stop flushing**? If this is happening, water is continuously running through the toilet and needs to be fixed.
- Is there **a leaky faucet or toilet in the bathroom at school**? Be sure to let someone know so that it can be repaired.
- If there is **a pool or a hot tub at your house, encourage those who use it to cover it afterwards**. This prevents evaporation and having to keep refilling.
- If the adults in your home occasionally water the lawn, **encourage them to water in the cooler parts of the day (early morning, or at or after sunset), and never on windy days**. This keeps in the soil all the water being sprayed instead of most of the water being lost to evaporation.



- The concept of **Water Awareness Teaching and Educational Robot "WATERobot"** is presented through an *educational video clip* to educate kindergarten and primary school children about the efficient use of water.

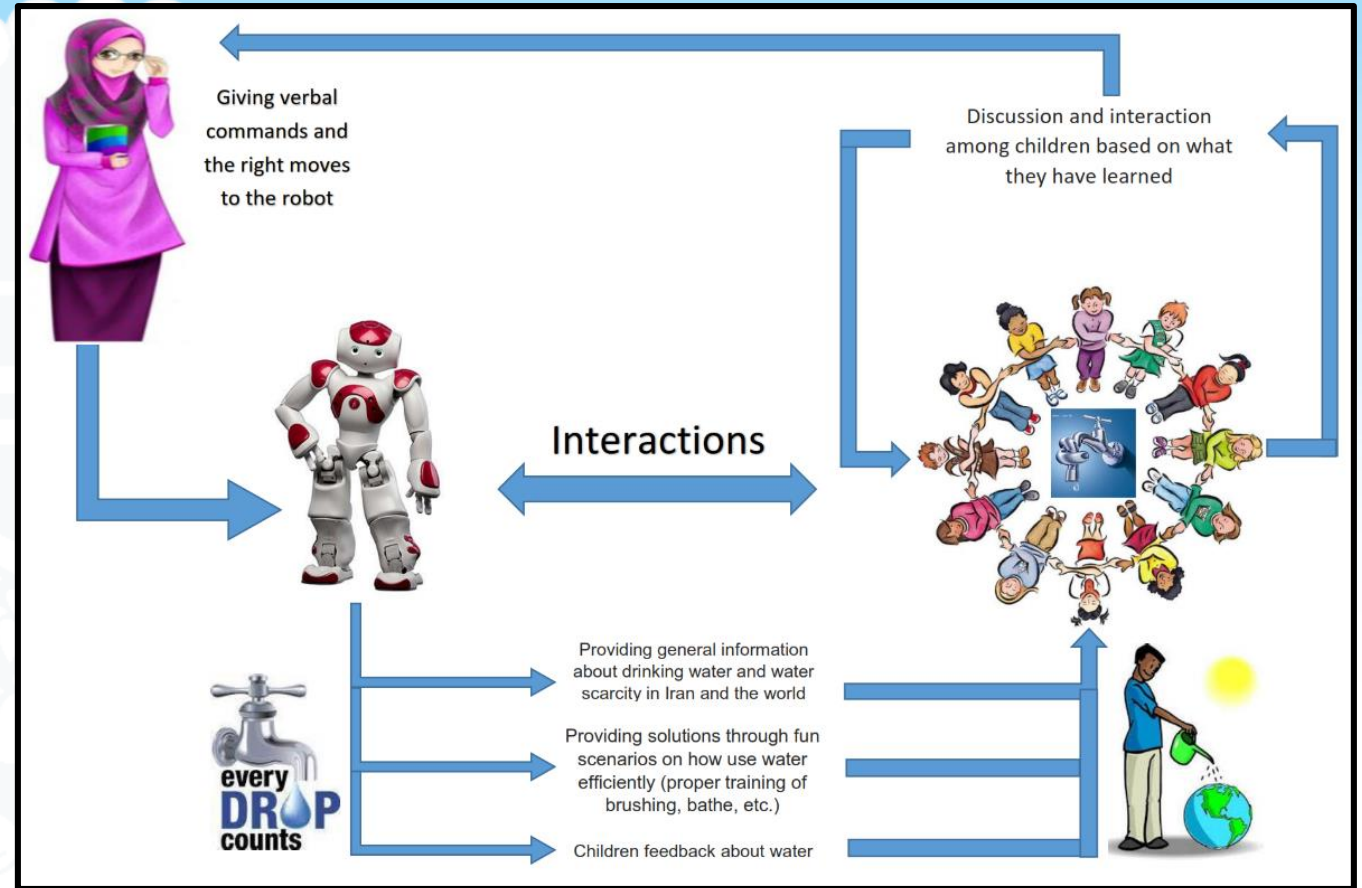


Iranian children's drawings on the significance of saving and conservation of water.



# Robot Assisted Water Education for Teachers (RA-WET)

- Teaching scenarios are devised to enhance interaction among kids and the **NAO** social robot.
- NAO** (renamed with an Iranian name “**Sina**”) is used to teach children the proper way to conserve water.
- The idea with diverse scenarios has potential to be shown on **TV stations** during children’s programming.



- Using humanoid/animalistic social robots as teaching aids in classrooms is a novel approach to educate concepts of “**conservation/saving**” and “**squander /profusion**” of water. (Received the “**Best Innovative Idea Award**” at the 8<sup>th</sup> Int. Conf. on Social Robotics in Kansas City, USA, November 1-3, 2016)



- We anticipate that young children/students will be able to not only learn various ways of saving water but also commit themselves to its long-term practice with the side benefit of relaying this message to other kids.







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# CONCLUSION

What does Iran, with serious water problems, need to do in order to keep pace with the rest of the world in water saving and conservation? **Among other things:**

- **There needs to be a thoughtful investment made to educate our children on water awareness, by using state of the art technologies which can make the learning process joyful and effective for them.**
- **Social robotics education and training for teachers can be an important part of the resources set aside to meet this goal.**
- **An active community of researchers, teachers, students, and TV stations collaborating on RA-WET projects is something that we propose as our goal, to ensure that our children are well educated about vital challenges that water shortage can bring into their lives in the future.**



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**THANK YOU!**

