



Appropriate Technological Development Challenge

During a recent trip to the Central American country of Honduras, I observed several small communities of people who were struggling to find clean drinking water. Many people, especially the very young and very old, were experiencing illnesses related to drinking polluted water. The people in these communities were very poor and uneducated. They were located in a remote mountainous region of the country where centralized water treatment facilities and distribution is non-existent. The community is located near a small river; however, the river is often dirty and carries large amounts of silt from the nearby country side.

Illnesses caused from ingesting polluted water is epidemic in many developing countries around the world. The effects of these illnesses are a cyclical process that relates to all types of poverty (mental, monetary, physical, and spiritual). If the inhabitants of these communities utilized a small, portable, and sustainable water purification device they could eliminate many of their physical problems.

Design Challenge

Working as a small design team (3-4) design and construct a small, portable, and sustainable water purification device that could be utilized by the people described in the above scenario. Base your design and construction on solid research & design principles and calculations.

Limitations/Specifications:

1. Water purifier must be small, portable, and lightweight (can be operated by 1 person of normal size).
2. Water purifier must be constructed of locally available materials (materials available in Honduras).
3. Water purifier must be low cost (total materials cost must not exceed \$10 U.S.).
4. Water purifier must be sustainable (can be operated and maintained properly by local inhabitants).
5. Water purifier must be able to operate efficiently and safely under all conditions.
 - a. Required water quality testing done at Water Quality Laboratory – 217B Driftmier Engineering Center

Water Testing:

1. Resource water will originate from Oconee River (located next to River's Crossing Building).
2. Water purity testing must be conducted prior to any form of human or animal ingesting.
3. Conduct all water testing prior to class presentation.
4. Calculate and record water quality test results (e.g., utilize table and graphs).
5. Provide solid rationale for the design of your water purification device.
6. Summarize test results and make recommendations of water purification device.

Scoring:

Scoring will be based on:

- Your rationale for your solution (grounded on strong research)
- Technical design of your solution (technical drawing & parts list)
- Craftsmanship and construction
- Functional test
- Post test analysis of your solution
- Re-testing of experiment
- Accurate documentation and application of Engineering Design Notebook

Suggested Reference Sources

Source	Location
Appropriate Technology Reference Library	2 nd Floor Reference Desk – UGA Science Library
U.S. State Department – Background Notes	http://www.state.gov/www/background_notes/
CIA – The World Factbook	http://www.cia.gov/cia/publications/factbook/index.html

You will be expected to give a short presentation using the poster session format to describe your rationale for your thermal resistance device. See attached *Poster Session* instructions.