

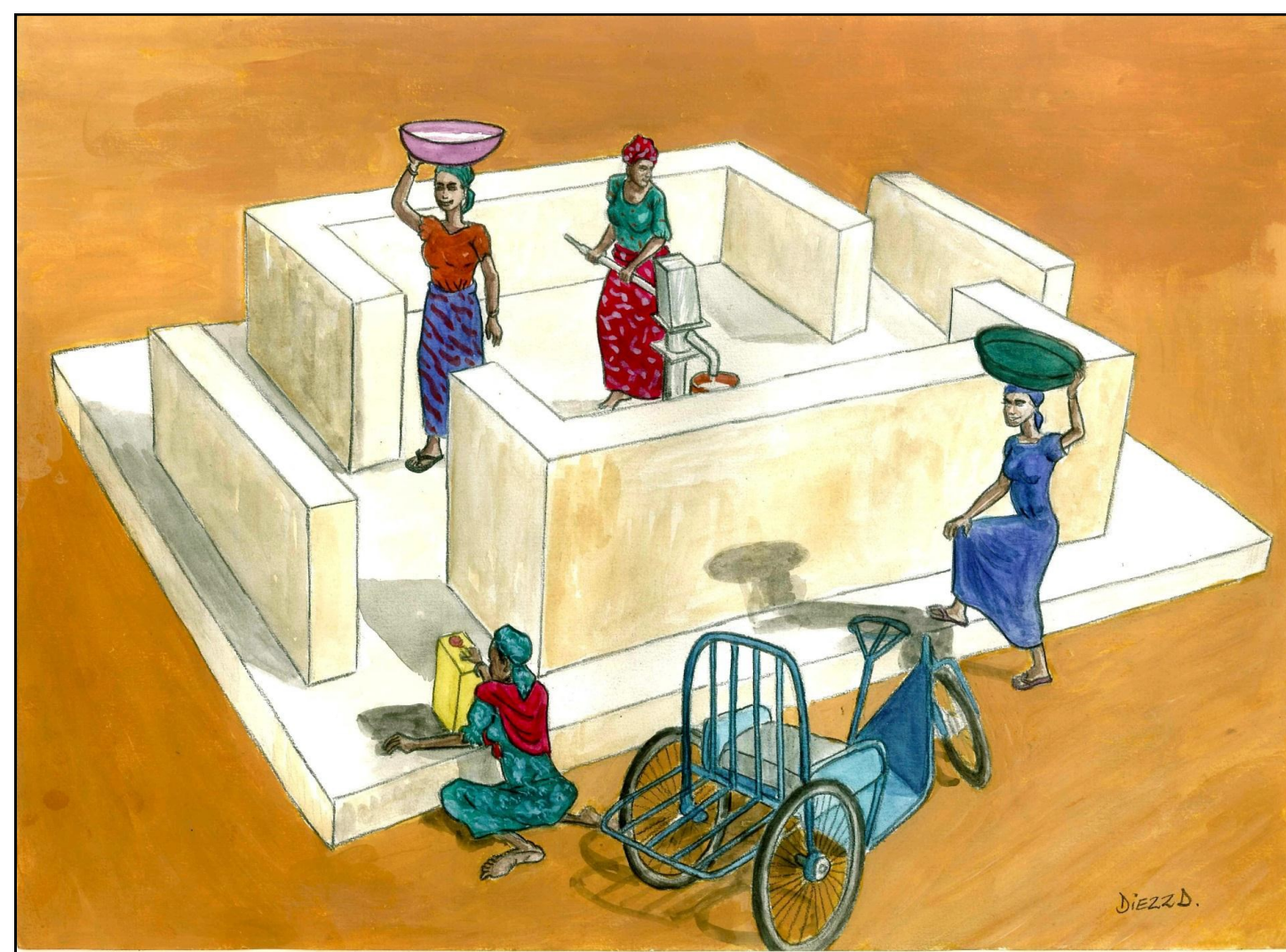
AWDS PROJECT: IMPROVING ACCESS TO WATER, SANITATION AND HYGIENE FACILITIES

FOR PERSONS WITH DISABILITIES IN AFRICA

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Background

The World Health Organization estimates that persons with disabilities constitute approximately 15% of the global population. Often, this group is excluded and marginalized in society. Persons with disabilities face unique challenges obtaining water and using sanitation facilities.



The AWDS (Africa WASH and Disabilities Study) aims to develop solutions to challenges faced by persons with disabilities through hand pump modifications and construction of low-cost assistive technologies. These improvements to the infrastructure add little to no cost to the construction; assistive technologies are designed to be locally sustainable.

Acknowledgements

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- ◆ Dr. Tim Van Dyke: Disability Resources Group Advisor
- ◆ Rebekah Randolph: Project Leader
- ◆ Seth Betteridge: Disability Resources Group Leader

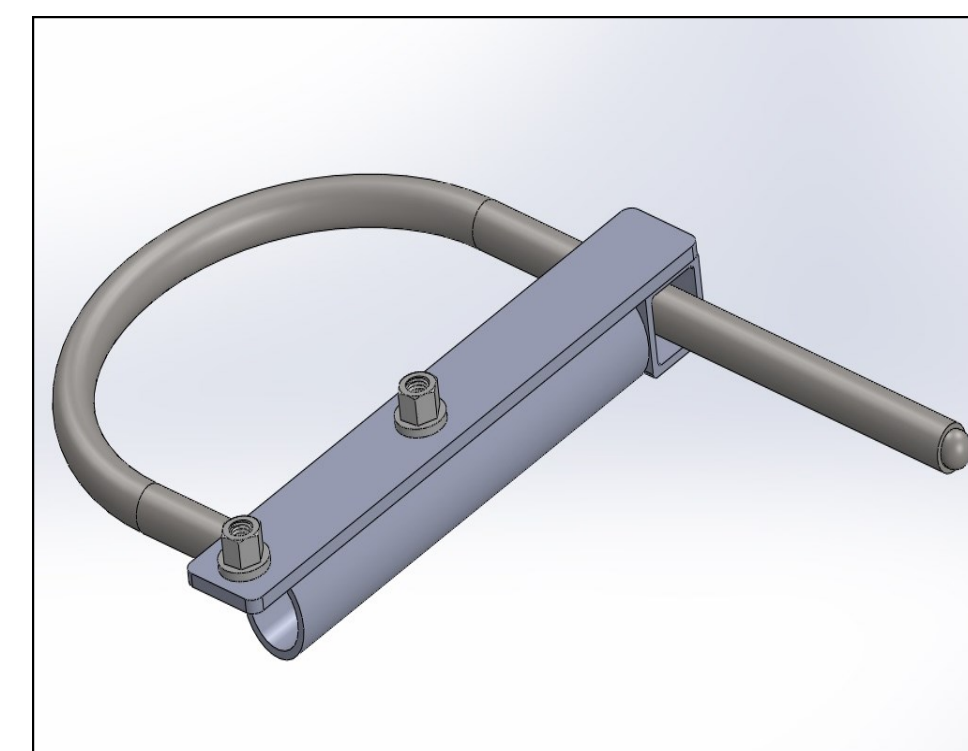
Pump Handle Redesign

In a previous phase, members of this project developed an attachable pump handle for the India Mark II Pump. The modified shape of this handle enabled persons with disabilities to more easily access clean water. Current work on the pump handle includes improvements in the following areas:

- ◆ A reduction in weight of the handle to decrease the likelihood of injury to persons around the pump. The new model reduces the diameter of a tube to which lightens the overall weight of the pump by approximately forty percent.
- ◆ Develop a design that utilizes locally available materials.
- ◆ Improve the fit of the pump handle onto the end of the pump.



Failed modified pump handle in Niger due to high force.

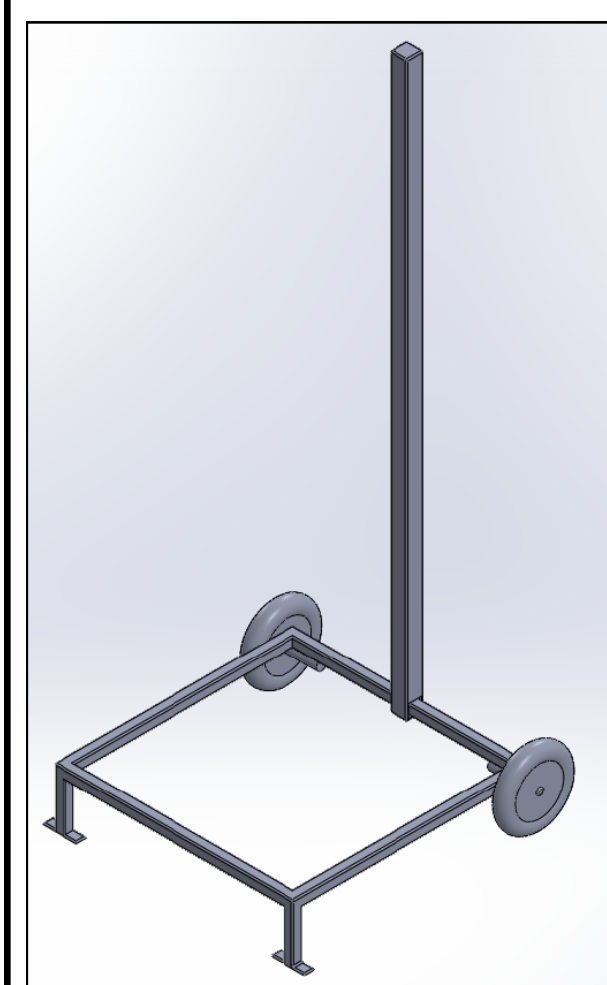


Model of modified light weight pump handle

Water Transportation Modifications

In January 2014, a site team from Messiah College traveled to Ghana and worked with a local artisan to develop a preliminary design of a modified jerry can tipper. However, testing of this new design revealed the following concerns:

- ◆ Using a rope to pull the device is difficult and awkward.
- ◆ Device has a high center of gravity, causing it to tip over.



Right: Current design of the jerry can tipper transportation device.

Left: Proposed redesign of base and handle.



Through additional testing and evaluation the following design improvements have been suggested in order to make transportation of the jerry can easier for persons with disabilities:

- ◆ Install a handle at a 90 degree angle that allows the device to easily be either pushed or pulled
- ◆ Connect the handle to the bottom of the jerry can tipper to increase the overall stability of the device

Infrastructure Redesign

◆ **Hand Pump Superstructure Redesign:** Modifications to current hand pump superstructures have included the addition of gradually sloped ramps, lifting stations, and seats. These changes provide improved access for individuals in wheelchairs as well as those who find fetching water to be physically challenging. The project currently works in countries in West Africa such as Ghana, Mali, Niger, and Malawi. Future work will include superstructure modifications in additional countries such as Sierra Leone and Kenya.



Above: A woman using a modified pump superstructure to fetch water from a tricycle.

Right: Interior of a modified latrine with added hand support and cement latrine seat.



◆ **Disability-Friendly Latrine Designs:** The AWDS has worked to develop infrastructure design changes by adding hand supports and guides in latrines. These aid persons with disabilities and improve sanitation conditions for persons with visual impairments. Latrine chairs, developed in a previous phase of the project, are also added to the structures.

Conclusion

This project not only aims to provide improved access to clean water and sanitation facilities for persons with disabilities, but also works to mitigate the social barriers that marginalize persons with disabilities from the community. By developing modifications that enable persons with disabilities to be more independent, this project can ultimately serve to change the attitudes and perceptions of the community at large.

Further Information

To learn more about the ongoing work of this project, please visit our website (<https://www.messiah.edu/collaboratory/africawash/index.php>) or our Wiki page (http://www.thecollaboratoryonline.org/wiki/Africa_WASH_and_Disabilities_Study).

