Training and Education Programs and Initiatives

The KISS Training and Education Center is a space where individuals and families from the nearby village of Kasisa, Mwanza Region, can learn how to implement cutting edge, affordable and sustainable farming and living technologies that will allow them to be better informed and educated and ultimately improve the standard of living for themselves as well as the entire village community. The Center's development philosophy encapsulates three core principles.

First, development must be predominantly a bottom-up process. Thus, the Center's development programs are primarily village-based in the sense that it is up the members of the village to implement any of the techniques and learning modules taught by the Center. The Center's main role is that of an educator and advisor to the members of the village.

Second, the Center subscribes to the view of achieving development through a "big push" approach rather than a series of small initiatives that follow each other chronologically. The big push approach of development in low-income countries or communities attempts to simultaneously improve labor productivity (that is, household income), housing needs, infrastructure (e.g. access to clean water), health care and education services, among others.

Finally, the Center strongly adheres to the principle of sustainable development. Sustainable development initiatives are the only programs that can reconcile the quest for higher living standards of today's poor with the need to preserve the world's finite resources while maintaining or even lowering each person's carbon footprint.

While there are many different development initiatives within the 'Big Push' approach, the Center will focus initially on the following ten training and education projects:

1) Sustainable and Durable Housing

The Center will teach villagers how to use different materials and construction processes to build durable, affordable and more sustainable homes. Possible solutions include the use of locally grown materials such as bamboo and the manufacturing of clay bricks using brick making tools.

Bamboo Homes

There are many examples of simple, affordable bamboo-based homes in various developing countries. One of them is the modular, low-cost bamboo home created be a Filipino designer. For more information, go to

https://www.sbs.com.au/language/english/bamboo-houses-filipino-designer-unveils-plan-to-solve-his-country-s-slum-crisis

Brick Homes

Brick homes are known for their durability and flexible form. However, buying commercially made bricks is beyond the budget of many farming communities in low-income countries. A solution to this conundrum is offered by Dwell Earth, a Dallas based company. Dwell Earth's building technology centers on the construction of the compressed earth block, or CEB.

CEB is a construction material made from the dirt beneath your feet to build a wide variety of structures including homes, schools, churches, clinics, stores, barricades and fortifications.
Compressed Earth Blocks are made by compressing a soil and 4 -8 % Portland cement (used as a stabilizer) in a hydraulic press. For more information, go to

https://dwellearth.com/

2) Energy Efficiency

Energy efficiency is an important aspect of the world's need to reduce the further rise of global temperatures and thereby mitigate the adverse impact of climate change. The Center will educate village families about different ways to make their homes and businesses more energy efficient thereby reducing the carbon footprint of the village and its reliance on renewable resources.

3) Renewable Energy

Solar Energy

To provide an independent and reliable source of energy for each family in the village, we will combine forces with Barefoot College to teach villagers how to install photovoltaic panels on or near their homes. The approach by Barefoot College is unique in the sense that it does not require any prior engineering knowledge nor literary by the trainee. Instead, a straightforward color coding system will guide the solar panel training and installation process. For more information on this rural, women-centered sustainable development process, go to

https://www.barefootcollege.org

4) Clean Water Access

Currently, access to clean water is currently a laborious, time-consuming and inefficient undertaking for most village families. The goal of the Center is to provide a direct source of reliable, clean fresh water for every family in the village. To accomplish this goal, the Center will cooperate with Dallas members of *Engineers Without Borders - Texas Chapter* who have worked on fresh water projects in several developing countries around the world. With the help of *Engineers Without Borders*, the Center will identify the most efficient and least costly solution for fresh water access given the geographic and climatic conditions of the village. For more information, see

https://www.ewb-texas.com/previous-projects/

5) Toilet Design/Sanitation System

As in many African villages, there are few toilets in the village and open defecation is often the only option. The health problems from such practices are substantial. The Center will teach villagers how to install and maintain simple waterless toilets for each home. In recent years, engineers across the world have designed a large number of waterless toilet systems specifically for developing countries. Below is a description of one of these systems:

Waterless Toilet System: The Crapper

The CRAPPER, which stands for Compact Rotating Aerobic Pollution Prevention Excreta Reducer, is a self-contained, horizontally mounted, rotatable bio-drum based compost toilet that costs about $100/unit. It maximizes aerobic degradation to dramatically reduce waste volumes and is odorless. The drum housing is designed to allow for safe, sanitary and easy access for the removal of excess compost when the chamber becomes full. The private composting toilet is designed to be located near a family's home, providing safe access for family members and guests. The CRAPPER was created by Toilets for People. For more information about the Crapper and other waterless toilet designs, go to

https://inhabitat.com/8-toilet-designs-that-could-save-millions-of-lives-around-the-world/

6) Sustainable Agriculture and Aquaculture

Since farming is the main source of income for most families in the village, an improvement in the standard of living of the villagers requires an increase in farming output. However, a rise in farm productivity should not be obtained by compromising the health of the farmers or the village's environmental quality. Hence, the Center will focus on teaching only those productivity enhancing farming techniques that are sustainable for both the farmers and the ecosystem of the village. Examples of such technologies are:

a. Raising crop yields through the use of *sustainable irrigation* systems.

b. Increase farm output through the use of *environmentally friendly fertilizers* (EFFs). For more information, go to

   Https://envirobites.org/2017/10/19/environmentally-friendly-fertilizer-is-there-such-a-thing/

c. Exploring the use of different *varieties* of currently cultivated crops, in particular crop varieties that allow for several harvests per year or are more pest resistant. For more information including some pitfalls of pest resistant biotech crops, go to

   https://uanews.arizona.edu/story/research-shows-pest-resistance-biotech-crops-surging

d. Switching to *new crops* that have not yet been cultivated by village farmers but have the potential for higher yields and net income. See, for example, the rise of vanilla farming in many parts of Africa including Tanzania:

   http://goldman-ci.com/tanzania-farmers-strike-gold-with-vanilla/

e. The Center will initiate a discussion among villagers about meet- versus plant-based diets. In particular, the Center will provide information about the poor health outcomes of meat-based diets, their high carbon footprint and the crop damage caused by free roaming cattle.

The Center will provide information to villagers about availability and earnings potential of alternative professional activities within the skill set of village farmers. In particular, the Center will explain the possibility of income generation, either full-time or part-time, from running fish farms on Lake Victoria. Since commercial fishing including illegal fishing on Lake Victoria has led to serious overfishing and a depletion of the lake's fish stocks, producing fish through fish farms is the only economically viable and environmentally sustainable way of fish production on Lake Victoria. For environmental and other problems facing Lake Victoria, see

https://www.newvision.co.ug/new_vision/news/1513841/strict-laws-salvage-lake-victoria

7) Garbage Reduction and Recycling

Garbage avoidance and recycling is a neglected objective for many rural communities in low-income countries, mostly due to income constraints and lack of knowledge. The Center will educate villagers about simple, low-cost garbage reduction and recycling methods such as biofuels from biomass. Biofuels can be used as a substitute for fossil fuels to generate heat, power and/or chemicals. Biofuels offer additional benefits including sustainability and reduction of greenhouse gas emissions. For more information, go to

https://www.sciencedirect.com/science/article/pii/S0196890407000763

8) Education and Vocational Training

The goal is to enhance the education experience and outcomes of the village's students and to improve business, organizational and marketing skills of the villagers to bring their agricultural products to markets in nearby villages and cities.

Education

The education experience of the students in the village is hampered by the lack of adequate school infrastructure, appropriate teacher training and student access to necessary education materials such as books. While infrastructure and teacher training issues are beyond the scope of the Center, the Center will help students to gain access to pivotal school books by partnering with initiatives such as *Books for Africa*. For more information, go to

https://www.booksforafrica.org/

Vocational Training

Business organization and marketing skills are vital requirements for farmers to reap the benefit from increased agricultural productivity. The Center will provide vocational training classes that will endow the villagers with the organizational and marketing skills needed to bring their products to market in timely and cost-effective manner.

9) Health Care

The health care situation of the families living in the village today is precarious due to the lack of health care infrastructure and direct access to health professionals. Right now, the only place for villagers to receive professional medical care and treatment is the city of …, a good … miles away. Preliminary results from the Millennium Village Project (MVP), spearheaded by development economist Prof. Jeffrey Sachs, show that one of the most notable changes in the life of the MVP villagers was access to a local medial professional, typically a village nurse, leading to measurable improvements in maternal health and better health outcomes in general. For more information, go to

https://fsi.stanford.edu/news/fog-development-evaluating-millennium-villages-project

As a result, the Center will support the funding for the training and subsequent recruitment of a local medical professional, i.e. a village nurse or nurse practitioner. While the cost of this medical service should be covered eventually by a medical fee paid for by each village household, the Center will pay for these medical expenses initially and will continue to do so until the increase in the average household income in the village is large enough to shoulder the monetary burden of this service.