



# MOBILE MALAWI PROJECT

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# Place-based STEM Education: Hybridized Knowledge

- Pilot Project: Using Mobile Phones to connect schools with traditional agricultural practices to enhance nutrition and sustainable food security.



Dr. Chinkhuntha:  
Freedom Gardens  
Mobile Malawi Project  
(2009-2010)



# Connecting with traditional farming practices with science teaching in schools



## Mobile Malawi Project

Connecting schools and communities using mobile technologies

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The Mobile Malawi Project connects schools and communities to address issues related to teaching about sustainable agriculture in the primary schools of Malawi, Africa. Our goal is to develop instructional multimedia that draws from indigenous knowledge to be shared widely with educators, students, and community members. Mobile technologies are used as primary data collection and delivery platforms as we explore effects on science education pedagogy, curriculum, and culture.

This project is dedicated to the memory of Dr. Glyvyns Chinkhuntha, founder of Freedom Gardens. [\[Bio\]](#)



### Mobile Curriculum Connections

 VirginiaTech

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Webmaster

[www.mmp.soe.vt.edu](http://www.mmp.soe.vt.edu)



# Freedom Gardens: Sustainable Agriculture



- Gravity-fed irrigation
- Composting
- Sunken plots
- Organic Pest Control
- Traditional tools
- Low Input



# Sunken Plots

- Create microhabitats
- Increased diversity of crops
- Harvest year round
- Reduces famine





# Mobile Malawi Project (2008-2011)

Daniel Chinkhuntha:  
Organic Farmer



Timothy Banda  
Primary School Teacher



Connect with mobile Phone: 300 miles apart!



# Primary School: Zomba, Malawi





Garden Site



Water Source

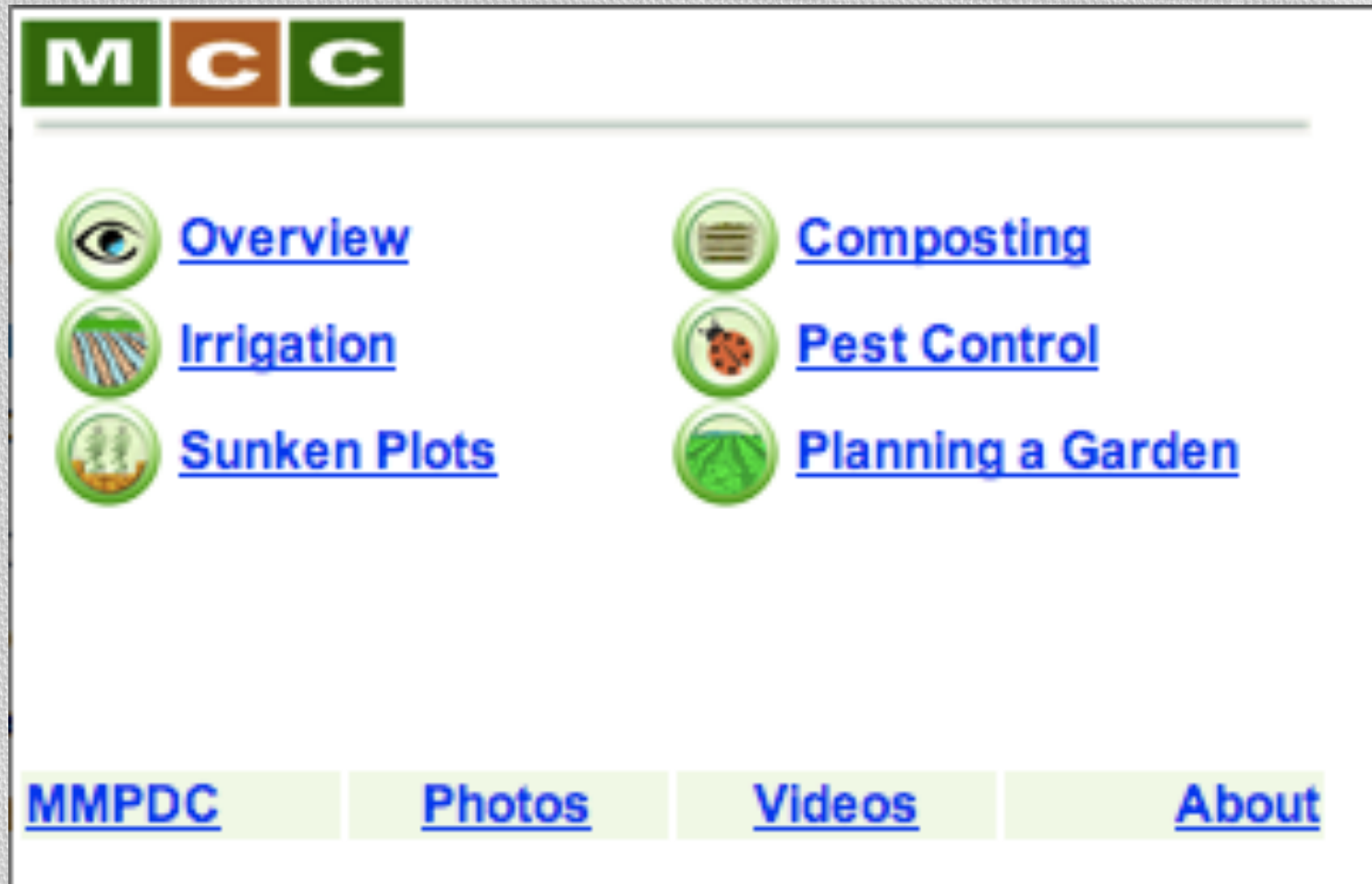


Primary School: Zomba, Malawi



# Connecting with traditional farming practices with science teaching in schools

- Mobile Phone App (Science Lessons)





## Composting

*Purpose:* To learn how to use organic plant material to produce compost for increasing the fertility of a garden.

*Resources:* Mobile phone, local garden site, hoe, shovel



[Elder Knowledge](#)



[Activity](#)

[MMPDC](#)

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# Dr. Chinkhuntha discuss Sunken Plots







## Background Information

Many people come for our products because we do not use chemical fertilizers and pesticides. We solely rely on biological protection of our crops. Having both plant and animal species in the garden helps with creating ecological equilibrium. We believe that allowing predators to exist in the garden is the best way to control pests. Therefore, we allow them to coexist, which keeps pests checked to reasonable levels. This is clearly illustrated by the relationship between aphids and ladybirds. Chemical sprays tend to kill ladybirds as well and once aphids emerge again, they rapidly multiply to unbearable levels.

[MMPDC](#)

[Photos](#)

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## Activity

1. Discuss with your students the background information about pest control at Freedom Gardens.

2. Arrange your students into working groups. Each group should discuss the following questions about pest control:

What kind of pests exist in your garden?

What effects do these have on crop production?

How do you control the existing pests?

During the group work, allow each group to use the mobile phone to observe the video of Dr. Chinkhuntha discussing pest control at Freedom Gardens.

3. Using your mobile phone, take photos of local pests in your garden site. Send the photos along with a description of the pests and its effects using [e-mail](#) to the Project Data Center.

4. In class, discuss the reasons why it is good to have both lady bugs and aphids co-exist in your garden. What other natural means do you know of for controlling pests? Share your natural pest control methods using [e-mail](#) to the Project Data Center.

6. After discussing pest control with your class, make a list of questions that the students would like to know more about. Using your mobile phone, send an [e-mail](#) to the Project Data Center with your questions for Daniel, the organic farmer, or Dr. Kalande at Domasi College.



# Sharing Results on Mobile Phone

Figure 3: Elder farmer's posts on data collection website

## Manure Application in Maize

March 5, 2008



Advised Timothy Banda through Domasi College to apply a handful of Delia as dollop method. Or to apply 1Kg of compost per plant if Delia is not enough. I have receaved the airtime.

Mobile post sent by freedomgardens using Utterz. Replies.



## Organic Pestcide

March 8, 2008



Advised Timothy Banda to spray a soaked(1L of Water) pounded mixture of Sesbania sesban & Tephrosia vogelii Leever .

[Mobile post](#) sent by [freedomgardens](#) using [Utterz](#). [Replies](#).



Figure 4: Examples of primary school teacher posts on data collection website

irrigation

July 11th, 2008



Fallow irrigation was done in the field after experiencing a drought of about 2 weeks.

[Mobile post](#) sent by [domasicollege](#) using [Utterz](#). [Replies](#).

Posted in [Ask an Expert, Share Data](#) | [1 Comment](#) »



# Sharing Results on Mobile Phone

ridging

July 14th, 2008



Learners were ridging for planting corn.

Mobile post sent by domasicollege using Utterz. [Replies.](#)

Posted in [Ask an Expert](#), [Share Data](#) | [No Comments](#) »



## weeding in corn

July 14th, 2008



Corn being weeded by learners.

Mobile post sent by [domasicollege](#) using [Utterz](#). [Replies.](#)



# Sharing Results on Mobile Phone

corn harvesting

July 18th, 2008



Learners were harvesting corn. Tim was advised to assist learners weigh the yield per plot and convert it to yield per plot. Also to explain by demonstration the meaning of net and gross plots.

Mobile post sent by domasicollege using Utterz. [Replies](#).

Posted in [Ask an Expert](#), [Share Data](#) | [No Comments](#) »



## school project tools

March 19th, 2009



Project tools

Mobile post sent by domasicollege using Utterli. 1 Replies.

Posted in Ask an Expert, Share Data | No Comments »



# Results of Pilot Study

- Elder farmer successfully communicated with primary school teacher 300 miles away using mobile phone
- Primary school teacher/students asked questions regarding pest control and organic fertilizers
- Students were able to successfully grow a garden using organic composting, gravity-fed irrigation, and other sustainable practices using the Mobile Malawi Curriculum



# Publication

- Glasson, G. E. (2010). Developing a sustainable agricultural curriculum in Malawi: Reconciling a colonial legacy with indigenous knowledge and practices. In D. Tippins, M. Mueller, M. van Eijck, & J. Adams (Eds.), *Cultural studies and environmentalism: The confluence of ecojustice, place-based (Science) education, and indigenous knowledge systems* (pp. 151-164). New York, NY: Springer.



# Daniel Chinkhuntha: Organic Farmer

