

Dr. Worku L. Mulat

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My philosophy of teaching

At the beginning of my teaching career in 1987, I considered teaching to be my duty.

Over the years it has come to be my vocation and passion. Teaching for me is a lofty profession constantly nurtured with life long-learning commitments with the ultimate goal of contributing to the creation of a science oriented and environmentally more sensitive society.

I strongly believe that the teaching profession represents a link between generations, where its mode of knowledge transfer is constantly updated through epistemological understanding to reflect the level and needs of a given society. Without catalytic role of teaching to pass on and acquire new knowledge and understating about the world, the axiomatic statement of Albert Einstein which reads as “We mortals achieve immortality through the permanent things we create in common” would be fallacious. Taking into account how my own thoughts and philosophy of life has been influenced by my predecessors and, in turn how I influenced others, I would say that my students inherit my ideas the same way as my children inherited my genes.

Accepting the above inheritance analogy as my personal belief, I exercise great care in selecting what to teach and how to teach. In the outset I carefully select the must know items depending on the objective of the course and inform my students. This is essential to keep students on track in the information super highway crowded with too many publications on the subject. I feel there is no panacea for effective teaching but consulting on method of teaching written by authoritative sources, cross fertilization of ideas between colleagues and constant feedback from students helped me a lot in improving my method of teaching in a dynamic way. I believe the secret of effective teaching is daily preparation and openness to criticism from colleagues as well as students. I use blackboard and power point, to explain my points and provide class work and home-take assignments to involve students in active learning. Stimulating students to ask questions and express their views on a subject is my style to keep the teaching learning process alive and it works!

the course. I always keep at the back of my mind that a given class is likely to contain weak, average and outstanding students and adjust my methods of teaching taking each category into account.

Professional Interests I believe sharing knowledge is the most sacred profession and knowledge management is critical for making it a tool for development. Thus I have keen interest to be effective Science Educator, with strong emphasis on applied research and supervision of students in the areas of water pollution, water resource management, water and health. The overarching goal of this endeavor is ensuring human security around the globe and thus making the world a better place to live in.

Education Ph.D. Applied Ecology 2001, National University of Ireland, Cork. Thesis: "Sensitivity of Biotic Indices to Natural Disturbances"
MSc Environmental Sanitation 1993, Gent University, Belgium.
BSc Biology 1987, Asmara University, Asmara, Eritrea.
Other: Computer Training, 2001, Addis Ababa, Ethiopia; Curriculum Development and module preparation Training, Carter Center, Addis Ababa, Ethiopia; 2003 Advanced Wastewater Treatment Training, Gent Belgium, 2004.

Employment

2016 - Present Assistant Research Professor and PIRE Project Manager

National Science Foundation

Expert (Part-Time), Ecology, Human Resources, Division of Undergraduate Education.

Principal Responsibilities:

- Evaluate proposals for funding
- Participate in panel discussions
- Provide feedback for improvement of grant application processes
- Managed EIA Division's Committee of Visitors, May 2001.

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2012 - Present Adjunct Associate Professor, University of Connecticut, CT

- Assessing inter-annual variability in blue and green water scarcity at high spatial and temporal resolution in Africa - case studies in Ethiopia
- PhD Title: Development and validation of macroinvertebrate metrics in Ethiopia.

Bibliography

Reports

- Water and Food Security PIRE report, E. Anagnostou, E. Holzer and W. Mulat (August, 2016)
- PIRE: Taming Water in Ethiopia - An Interdisciplinary Approach to Improve Human Security in a Water-Dependent Emerging Society

Book

- **H. Kloos and Worku Legesse.** Water Resources Management in Ethiopia: Implication to the Nile Basin (Ed.). Cambria Press, NY, 2010.
- **Meg Lowman** and Worku Mulat. Peppertree Press, Sarasota, FL, 2014.

Book Chapter/Lecture note

- **Worku L. Mulat et al.** Building Household Resilience in a Village in South Wello Zone Using a Family Approach In: Tadele *et al.* Giving Back to the Community: Community Development Projects Implemented by Academics in Ethiopia (2016). Eclipse Printing Press, Ababa, Ethiopia.
- **W. Legesse**, D. Hilemariam and H. Kloos. Water supply and sanitation. In: Brhane Y, Haile Mariam, D and Kloos H., 2006 (Ed.) Chapter 8, pp129-151. **W. Legesse** and H. Kloos. Water pollution from industrial and agricultural sources. In: Kloos & Legesse, 2010 (Ed.) Chapter 12, pp 321-351.
- **H. Kloos and Worku Legesse.** Water Resources Management in Ethiopia: Implication to the Nile Basin (Ed.). Cambria Press, NY, 2010.
- Margaret Lowman **and Worku L. Mulat.** Beza: a conservation book for children narrating a story of a girl trying to save Ethiopian Orthodox Church Forests. Submitted for publication.

- H. Kloos, **W. Legesse**, and A. Adugna. Water Resources Management in the Nile Basin. In: Kloos & Legesse, 2010(ed.) Chapter 2, pp 31-62.
- S. Moges, H. Kloos, S. McFeeters, and **W. Legesse**. The water resources of Ethiopia and large scale hydro dam and irrigation development. In: Kloos & Legesse, 2010(Ed.) Chapter 3, pp 63-101.
- H. Kloos and **W. Legesse**. Small scale irrigation and hydro dams. In: Kloos & Legesse, 2010 (Ed.) Chapter 4, pp 103-122.
- **Worku Legesse** and Argaw Ambelu: Personal Hygiene. Lecture series, Carter Center, Addis Ababa Ethiopia, 2004
- **Worku Legesse**, Teklu Mulugeta and Argaw Ambelu. Introduction to Ecology: Lecture series, Carter Center, Addis Ababa Ethiopia, 2002.
- Tefera Belachew, Abebe Gebremariam, **Worku Legesse**, Tsegaye Asres, Seid Tiku, Estifanos Kebede, Tamirat Tigabu, Getachew Dememe, Muluneh Haile: Micronutrient Deficiency. Lecture series, Carter Center Addis Ababa Ethiopia, 2005.

Journals

- Sarfo, Twum, E , Koku, J.E., Yankah, K Kloos H, Worku, M. Stakeholders Participation and Sustainability of Corporate Social Responsibility Programmes in Ghana: A Study of AngloGold Ashanti Mine in Obuasi, *Environment and Natural Resources Research* (2016); 6(1):1-8
- Baye, S., Kloos, H., **Mulat, W.**, Assayie, A., Gulis, G., Kumie, A., & Yirsaw, B. (2012). Assessment on the approaches used for water and sanitation programs in Southern Ethiopia. *Water Resources Management*, 26(15), 4295-4309 doi: 10.1007/s11269-012-0145-7
- Seid Tiku, **Worku Legesse** et al. Factors affecting drinking water quality from source to home in Tehuledere Woreda, North East Ethiopia (2003). **Ethiop J Health Sci** **2003**; 13(2): 95-106.

- Awrajaw Dessie, Esayas Alemayehu, Seblework Mekonen, **Worku Legesse** Helmut Kloos and Argaw Ambelu. Solar disinfection: an approach for low-cost household water treatment technology in South-western Ethiopia. *J Environ Health Sci Eng.* 2014; 12: 25.
- Beyene A, Kassahun Y, Addis T, Assefa F, Amsalu A, **W. Legesse**, Kloos H, Triest L. The impact of traditional coffee processing on river water quality in Ethiopia and the urgency of adopting sound environmental practices. *Environ Monit Assess.* 2011 Dec 9.
- **Worku Legesse**, Solomon Gebre-Selassie. Sanitary survey of residential areas using *Ascaris lumbricoides* eggs as indicators of environmental hygiene, Jimma, Ethiopia. *Ethiop J Health Dev.* 2007; 21(1): 18-24.
- Aemere Awoke, Argaw Ambelu and **Worku Legesse** Treatment of raw water using forssk farinosa shrub, a traditional water clarifier by 'Tsemey Bena' people. *Ethiopian Journal of Health Sciences* 2006 16(1), 9-20
- **Worku Legesse** and Kebede Faris. Bacteriological analysis of protected springs in Jaimma Zone Southwestern Ethiopia (2000). *Ethiopian Journal of Health sciences*, Vol. 10, No. 1, pp 19-23.
- **Worku Legesse** and Tesfaye Getaneh. Sanitary chemical analysis of protected springs in Jimma Zone, Southwestern Ethiopia (1999). *Journal of Ethiopian Health Development*, 13(1):45-48.
- Zelke Alebachew, **Worku Legesse** et al. Determination of Ultimate Biological Oxygen Demand, and rate constant for liquid waste generated from student cafeteria at Jimma University: a tool for development of scientific criteria to protect aquatic health in the region. *Ethiopian Journal of Health Sciences* Jul 2004, Vol. 14(2) pp 101-107.
- Seid Tiku Mereta, Luc De Meester, Asgdom Malu, **Worku Legese**, Hailu Endale, Menberu Yitbarek,

Peter L.M. Goethals, Pieter Boets. Self purification of rivers as it flows through natural wetlands in Southwest Ethiopia. Publication pending.

- Esubalew Tesfahun, Abera Kumie, **Worku Legesse**, **Helmut Kloos** and Abebe Beyene. Assessment of composition and generation rate of healthcare wastes in selected public and private hospitals of Ethiopia. *Waste Management & Research*. 1 –6: © The Author(s) 2014.
- Seid Tiku Mereta, Delenasaw Yewhalaw, Pieter Boets, Abdulhakim Ahmed, Luc Duchateau, Niko Speybroeck, Sophie O Vanwambeke, **Worku Legesse**, Luc De Meester and Peter LM Goethals(2013). Physico-chemical and biological characterization of anopheline mosquito larval habitats (Diptera: Culicidae): implications for malaria control *Parasites & Vectors*, 6:320.
- Melaku Getachew, Argaw Ambelu, Seid Tiku, **Worku Legesse**, Aynalem Adugna, Helmut Kloos. Ecological assessment of Cheffa Wetland in the Borkena Valley, northeast Ethiopia: Macroinvertebrate and bird communities. *Ecological Indicators*, Volume 15, Issue 1, April 2012, Pages 63-71
- Birkneh Tilahun, Bogale Worku, Erdaw Tachbele, Simegn Terefe, Helmut Kloos and **Worku Legesse**. High load of multi-drug resistant nosocomial neonatal pathogens carried by cockroaches in a neonatal intensive care unit at Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia. *Antimicrobial Resistance and Infection Control* 2012, **1:12**. T
- D. Yewhalaw, **W. Legesse**, W. Van Bortel, S. Gebre-Selassie, H. Kloos, L. Duchateau and N. Peybroeck. Malaria and water resource development: the case of Gilgel-Gibe hydroelectric dam in Ethiopia. *Malaria Journal* 8:21 (2009).
- Rani Devi, Esubalew Tesfahune, **Worku Legesse**, Bishaw Deboch and Abebe Beyene. Assessment of siltation and nutrient enrichment of Gilgel Gibe Dam, Southwestern Ethiopia. *Bioresource Technol.* 2008;99:975-979.

- Delenasaw Yewhalaw, **Worku Legesse**, Solomon Gebre-Selassie, Helmut Kloos, Human myiasis in an endemic area of southwestern Ethiopia: knowledge, perceptions, and practices. *Ethiop. J. Hlth Dev.* 2007;2:166-172.
- Ambelu, A., **Legesse, W.**, Goethals, P.L.M. and De Pauw, N. (2006). Development of decision support techniques for river health. Centre for *Environmental Sanitation Newsletter*, Ghent, University.
- Tefer Abegaz, **Worku Legesse** and Seid Tiku. Determination of critical concentration and diurnal variation of dissolved oxygen (DO) in relation to physicochemical variables in Boye Pond, southwestern Ethiopia. *African Journal of Environmental Assessment and Management*, Vol 10 March 2005.
- Eshetu Gizaw, **Worku Legesse** et al Assessment of factors contributing to Eutrophication of Aba Samuel Water Reservoir in Addis Ababa-Ethiopia. *Ethiopian Journal of Health Sciences* Jul 2004, Vol. 14(2) pp 109-117.
- A Ambelu, P Goethals , W Legesse and N De Pauw(2004). Development of decision support techniques for monitoring, assessment and management of rivers in Ethiopia Center for Environmental Sanitation Newsletter. p.38-39.
- G. Kurkura, T. Zewudie, **Worku Legesse**. Knowledge, Attitude and Practice of Barbers towards HIV prevention in Jimma town (2002). *African News letter on Occupational Health and Safety*.
- **Worku Legesse**. Boye Pond-a dying Hippopotami sanctuary in Jimma Zone Southwestern Ethiopia. Conservation Conference at Cambridge University, March 2000, Cambridge
- Degene Hailu and **Worku Legesse**, Pollution status of Awetu Stream as it crosses Jimma Town, Southwestern Ethiopia (1997). *Bulletin of Jimma Institute of Health Sciences*, Vol. 7, No. 2, pp 79-85.

Presentations

- Building resilience and climate change adaptation: lessons for Ghana, April 24, 2015, Accra, Ghana.
- Conserving the environment: partnership between religion and science. April 8, 2015, Accra, Ghana.
- Invited presentation on Forest Solutions Summit at the California Academy of Sciences, San Francisco, and January 2015.
- Keynote Speaker and chairperson for oral presentations, International Hydrology Conference Sep 10-12, 2012, San Antonio, TX.
- Panelist on the likely causes of death of Lake Alemaya, Harar, Ethiopia. Ethiopian Public Health Association, Oct 2006.
- Visiting Scholar, Department of Environmental Health, Brown Green State University March 20, 2007.
- Invited Global Scholar at Opening Ceremony of Nature Research Center, Raleigh, North Carolina, April 18, 2012.
- Hailu Endale and Worku Legesse. Determination of nitrate level in Biological fluid in two groups of children that consume water from sources differing in the level of nitrate contamination, Agaro town, Southwestern Ethiopia. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia.
- Tsegaye Kebede, Worku Legesse et al. Assessment of Indoor Air Pollution in relation to respiratory complaints among Jimma University cafeteria workers, Jimma 2004. Ethiopian Public Health Association XVth Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia.
- Worku Legesse. Why preaching hygiene to the public when health professionals disregard it in a health care system? Lesson from Jimma University Hospital. Ethiopian Public Health Association XVth

***Grants and Fellow-
ships***

- Annual Public Health Conference 14-16 Oct 2004, Addis Ababa, Ethiopia.
- Worku Legesse. Physicochemical and macroinvertebrate survey of the River Gilgel Gibe, Oct 2004. Addis Ababa, Ethiopia.
- Fulbright Senior Specialist Grant to Ghana, Africa, USD, 9,000. (2015)
- International PhD students supervisor at EIWR, AAU, Ethiopia, USD, 6000(2015)
- Belgium Government grant to investigate the impact of the Gilgel Gibe Dam: a multidisciplinary Approach towards Capacity Building: USD, 120 million (2007), Principal investigator.
- Ethiopian Science And Technology Grant: USD 10,000, (2003), Principal investigator
- Tropical Diseases Research Grant to investigate (2006), incidence and prevalence of Malaria around Gilgel Gibe reservoir: USD 155, 000, co-investigator.
- M.Sc. Scholarship Grant, Gent Belgium (1991-1993).
- Ph.D. Scholarship Grant, University College Cork, Ireland (1997-2001).
- Jimma University Grant to study environmental hygiene indicators in Jimma (2002) USD 5,000.
- Global Scholar Travel Grant t grant: USD 1000: Grand opening of Nature Research Center, North Carolina Museum of Natural Sciences. April 20, 2012.
- Travel Grant to North Carolina Nature Research Center: USD 1000. Undergraduate research seminar, Nature Research Center, North Carolina Museum of Nature Sciences, Raleigh, Aug 10-13.
- Travel Grant, USD 500. International Conference on Ground Water Expo Sep 10-12, San Antonio, TX.
- Up-to-date water treatment seminar, Gent, Belgium, Aug 14- Aug 21, 2004.
- Indoor Air Pollution measurement: WHO, June 1-6, 1995, Jimma University, Ethiopia.

- Management skills: Jimma College of Agriculture, Jimma, Ethiopia, 2005.
- Editorial***
- Academic Editor Journal of Ecology and Agricultural Research International
- Activities and***
- Board Member, British Journal of Climate Change Adaptation.
- Board***
- Board Member, Environmental and Analytical Toxicology.
- Membership***
- Board Member, Journal of Global Ecology and Environment.
- Professional and***
- Member of Ethiopian Public Health Association
- Honor***
- Member of Gent University Alumni Association
- Society***
- Member of Sierra Club
- Membership***
- Invited participant at Ethiopian Academy of Sciences
- Other***
- Serve as Ecology Expert to National Science Foundation
- Professional Activities***
- Participate in Ethiopian academy of Sciences.
 - Serve as Science Editor for ACCDON, Ltd., a private Publishing Company.
 - Write blog to Tree Foundation on environmental issues related to Ethiopia.
- Certifications/ recognitions***
- Certificate of Water Prize as one of the top-two finalist nominees, Oklahoma State University, September 2015.
 - National Science Foundation letter of recognition.
 - Certificate of recognition as Panelist and keynote speaker, Ground Water Expo, San Antonio, 2007.
 - Certificate of recognition as Panelist, Ethiopian Public Health Associate, Ethiopia, 2006.
 - Professional Registration and Licensing Certificate as Expert in Environmental Health, Federal

Ministry of Health, Federal Republic of Ethiopia, 25/5/2006.

- Participation Certificate in teaching-learning workshop, Ethiopian Public Health Training Curriculum and Staff Strengthening, The Carter Center, 25th July-4 August 2005.
- Certificate of Merit in recognition as panelist, on Environmental Degradation: Water scarcity and its consequences. 17th EPHA Annual Public Health Conference, November 8 2006, Harar, Ethiopia.
- Certificate of training on: Change Management, Organizational Leadership Skill, and Process Reengineering. Public Service College of Oromyia in collaboration with Jimma University, Feb 23, 2005.
- Certificate of Geographical Information System application (ArcGIS ArcView). Information Systems Services P.L.C (ISS), March 28 2008, Addis Ababa, Ethiopia.
- Diploma in Microsoft Office training, Cybersys Technology, Addis Ababa, Ethiopia, 5th of Jan 2002.