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Abstract:

A common conclusion established when discussing food security issues is that the world needs new, educated, global leaders. This paper examines the feasibility project for a Global Master's Program in Health and Sustainable Development, a joint venture between EARTH University and the American University of Beirut's Faculty of Health Sciences. In working with Dr. B.K. Singh, EARTH University's coordinator for the project, this paper establishes that a Master's in Health and Sustainable Development is both feasible and necessary. Both global health and sustainable development are areas that intersect with food security issues. Ensuring public health equity and sustainable agricultural practices, for example, are very important issues in beginning the fight against world hunger. Though the feasibility project is a long-term venture with a massive scope, this particular paper establishes that the Health and Sustainable Development program that is proposed is warranted for EARTH University and the local area. It does so by assessing the need for educated graduate students of Health and Sustainable Development in local communities. A number of individuals will be interviewed with essential questions about health and sustainability in rural Costa Rican communities that EARTH University works with. After, it is anticipated that this paper will establish that a Global Master's Program in Health and Sustainable Development is not only warranted, but highly desirable at EARTH University. In exploring the topic, it is also anticipated that this paper will establish important items and issues that the program must address. Overall, it is expected that this paper confirms the feasibility of a Global Master's Program in Health and Sustainable Development, and that such a program would produce new, educated, and global leaders that the world so desperately needs.

Acknowledgements

I could not begin this report on my experiences without thanking the institutions and the people who provided me this spectacular opportunity. First, I would like to thank the **World Food Prize Foundation** whose sponsors and donors are essential to the continued existence of the Borlaug-Ruan International Internship. Through the Foundation, I have also come to learn that **Dr. Norman Borlaug** and his incredible legacy are deserving of my thanks as well. Great thanks goes out to **Ms. Lisa Fleming** for her eternal patience and thorough correspondence. I'm also very appreciative of **Mr. Keegan Kautzky**, the first representative I met from the Foundation and a great advocate. In addition to being helpful, I am appreciative of their work and the enthusiasm that they bring to it. They *inspire*. I would also like to thank **Ambassador Kenneth Quinn** for his leadership and for always taking up some of his valuable time to speak with young individuals such as myself.

In Costa Rica, I'd like to thank **EARTH University**. The faculty, staff, and students of this spectacular institution were what made this experience particularly wonderful. Thanks especially to my mentor, **Dr. B.K. Singh**, whose vision inspired me and whose brilliant tangents taught me more than I ever could have thought to gain. **Ana Laura Dengo Flores** was phenomenal in her duties as my day-to-day supervisor. In addition to being there for all of my needs and questions, she was a steadfast friend and a great caretaker. **Sofía Montero Vargas**, too, was an excellent handler, introducing me to the university and meeting with me when I had concerns or questions. A huge thank you goes out to **Professor Alonso Murillo**, a man who took me under his wing and allowed me to assist in teaching his classes. And finally, thanks to **Karim Bolaños**, **Vanesa Chang**, **Allison Hoover**, **the Consortium**, and **the Global Youth Master's Club**. *Te extrañan*.

At home in Nebraska, I'd like to thank my friends and family for the constant support throughout this fine adventure. Thank you to **Judy Nelson,** the **University of Nebraska at Lincoln**, and the **Nebraska Youth World Food Prize Institute** for even getting me to Des Moines. And most importantly, thank you to **Simon Rohde**, a teacher and a mentor who not only introduced me to the World Food Prize, but has taught me so much beside.

EARTH University:

EARTH University, or *la Escuela de Agricultura de la Región Tropical Húmeda* (Agricultural School of the Humid Tropics) is an institution of higher learning located in Guácimo, Costa Rica, in the province of Limón. EARTH was founded in 1986 under Costa Rican law to be a private, non-profit, international university. The Costa Rican Government, the US Agency for International Development (USAID), and the W.K. Kellogg Foundation were the original benefactors. EARTH works to provide "a world-class scientific and technological education that emphasizes values, ethical entrepreneurship and environmental and social commitment" (EARTH University, 2013). EARTH boasts 421 students from 33 different countries, and it is also host to over 6,000 international and domestic visitors every year.

The Academic Model

EARTH University places a great deal of importance on its unique and rich academic model. The curriculum at EARTH has four main areas (EARTH University, 2013):

• Technical and scientific knowledge: Ensuring that EARTH alumni have the professional competencies to sustainably manage agriculture and natural resources.

• Personal development, attitudes and values: Fostering self-awareness, empathy, respect,

tolerance, teamwork, effective communication and life-long learning along with those values that promote peace, dialog and understanding.

• Ethical entrepreneurship: Developing in students an entrepreneurial spirit, so that they will be capable of proactively generating opportunities and solutions to problems. Students form and operate a business venture from beginning to end during their first three years studying at EARTH, gaining a comprehensive understanding of what it takes to start a business.

• Social and environmental awareness and commitment: Developing students' social and environmental responsibility and strengthening their capacity to generate positive change.

In addition to these four main curricular areas, the academic model at EARTH approaches learning in two main ways: student-centered learning and experiential learning. Much of the work done at EARTH is hands-on and participatory, and EARTH focuses on developing a collective entrepreneurial spirit in its students.

The Campus

The campus of EARTH University is 8,342 acres in area. This wide swath of land harbors not only classrooms and living space, but also educational farms (*fincas*), laboratories, a commercial banana plantation, and forest reserves, as well as plenty of recreational space. EARTH's campus is a sustainable environment. It fixes approximately 26,182 tons of carbon dioxide a year, while only emitting 1,124 tons of carbon dioxide. Furthermore, EARTH recycles 80% of its waste and grows organic and sustainable food. Sustainability is an ever-continuing effort on EARTH's campus, and the university is incredibly proud of its reputation as such a green institution.

The Global Master's Program in Health and Sustainable Development:

The Global Master's Program in Health and Sustainable Development is a joint venture between the American University of Beirut (AUB) and EARTH, funded by the MasterCard Foundation. I participated in the "Feasibility Project" for this particular program, a project to determine how this program will work. The Global Master's Program in Health and Sustainable Development is based on the idea that, "human health and wellbeing are intrinsically linked to the health and wellbeing of the planet, as well as to social justice and human rights" (EARTH University, 2013). Spearheaded by my mentor at EARTH, Dr. B.K. Singh, as well as the Faculty of Health Sciences at AUB, the program seeks to develop a rigorous academic program with four pillars: Global Health, Sustainable Development, Transformative Learning, and Social Entrepreneurship. The Global Master's seeks to be the first of its kind that combines these four components into a rich and vibrant academic program.

Global Health

Global Health may be defined as **"**the area of study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide" (Koplan, et al., 2009). It seeks to extend public health to a global scale and emphasizes that the field of health is above individuals or nation states, but should rather be viewed within a global context. Within the Global Master's Program, AUB is a valuable contributor to knowledge on Global Health, as its Faculty of Health Sciences is the first independent school of public health in the Arab region, a school that emphasizes equity and social justice while focusing on marginalized populations. AUB's work in the field of Environmental Health, a discipline that fits well into the Global Master's Program, is also a great boon to the project.

Sustainable Development

Sustainable Development is commonly defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (The World Commission on Environment and Development, 1987). It is development that seeks to fulfill the environmental, economic, and social needs of our world and its inhabitants in a way that maintains the integrity of humans and the planet that they live on. EARTH, as a heroic bastion of sustainability in the modern world, has a great to deal to contribute to sustainable learning and curriculum for the Global Master's Program.

Transformative Learning

Transformative Learning is learning **"**through true emancipation from…acceptance of what we have to come to know through our life experience…without our active engagement and questioning of how we know what we know" (Mezirow, 2000). It is educational theory that strays away from conceptual knowledge in order to gravitate toward hand-on, student-centered learning that encourages critical discourse and ethical acquisition of knowledge. Both AUB's Faculty of Health Sciences and EARTH emphasize an ethical approach to learning. The Global Master's Program will be one of the first ever to emphasize Transformative Learning specifically.

Social Entrepreneurship

Social Entrepreneurship **"**is the field in which entrepreneurs tailor their activities to be directly tied with the ultimate goal of creating social value. In doing so, they often act with little or no intention to gain personal profit" (Abu-Saifan, 2012). The field of Social Entrepreneurship seeks to produce young leaders who work independently and with a global focus in order to improve

the overall welfare of society. Both EARTH and AUB's Faculty of Health Sciences work to educate social entrepreneurs in their current programs. The Global Master's Program intends to do the same.

Research:

The Matrices

My first assignment was to compile a list of MasterCard Foundation projects. This list was to include relevant information such as the location of the project that MasterCard was funding, if it had included, the amount of funding that had been allocated, etc. The matrix could then be used as a convenient reference tool for other MasterCard projects, as well as serve to guide the aims of the Global Master's Program. The original matrix, documenting all of MasterCard's projects around the world, is featured in *Figure A*.

After, it was suggested that another matrix be created in order to list all MasterCard scholar locations. EARTH and AUB both harbor MasterCard scholars, and MasterCard scholars are considered stakeholders in the project. Therefore, it would be useful to know where they are worldwide. This matrix is featured in *Figure B*.

All matrices were constructed with the assistance of the MasterCard Foundation website (The MasterCard Foundation, 2013).

Figure A:

MasterCard Foundation Projects

Youth Programs

Program	Location	Purpose	Funding	Start	Years	Concluded?
Alfatoun	Global (Netherlands)	Social and financial education for disadvantaged youth	3.8 mil	2011 May	5	No
African Leadership Academy	Africa	Promote entreneurship among youth in Africa	1.65 mil	2010 July	2	Yes
American Univeristy of Beirut	Lebanon	Provide scholarships to disadvantaged students	9 mil	2011 Nov	8	No
Ashesi University	Ghana	Provide scholarships to disadvantaged students	13 mil	2011 Nov	9	No
Ashoka	Africa	Find and support promising entrepreneurial youth in Africa	6.6 mil	2012 Jan	5	No
Camfed	Ghana and Malawi	Promote secondary and financial education for women	10.1 mil	2010 July	5	No
CAP Workforce Development Institute	Kenya	Transform outdated technical and vocational training	5.8 mil	2011 Aug	5	No
ChildFund	Zambia	Train and accredit young people as nurses and midwives	7.6 mil	2013 Feb	5	No
Digital Opportunity Trust	Kenya and Rwanda	Equip youth with information and communications tech skills	5 mil	2010 July	3	No
EARTH University	Global (Costa Rica)	Provide scholarships to disadvantaged students	19.5 mil	2011 Nov	7	No
Education for Employment Foundation	Morocco	Increase employability skills for disadvantaged youth	3.2 mil	2011 Feb	4	No
Equity Group Foundation	Kenya	Scholarships and leadership development for secondary school	41 mil	2011 Jan	9	No
Fundacion Paraguaya	Tanzania	Establish/demonstrate self-supporting secondary school model	5.7 mil	2011 July	5	No
International Labour Organization	Global	Study how youth transition from school to work	14.6 mil	2011 May	5	No
International Youth Foundation	Egypt	Provide youth with skills and networks for employment	5.1 mil	2010 Sept	4	No
Legatum Center, MIT	Global	Support entrepreneurs in developing countries	20.9 mil	2011 May	10	No
Samasource	Kenya	Expand Samasource's online program to train/employ youth	5.3 mil	2012 Oct	5	No
Save the Children	Burkina Faso, Ethiopia, Egypt, Malawi, Uganda	Improve opportunities for young people in agriculture	39.8 mil	2012 Sept	5	No
Swisscontact	Tanzania and Uganda	Demonstrate and expand non-formal training for out-of-school youth	5.6 mil	2011 July	5	No
TechnoServe	Kenya, Uganda, Rwanda	Create employment opportunities for rural youth	11.5 mil	2011 Aug	4	No
AUB & EARTH	Global (Costa Rica, Lebanon)	Design a global Master's Program for health and sustainable development	1 mil	2013 March	2	No
Tufts University Talloires Network	Global (United States)	Improve transition to employment for university students and alumni from developing countries	5.9 mil	2012 July	5	No
University of Minnesota	Uganda, Tanzania, Kenya	Test and support of holistic approaches to economic opportunities for disadvantaged youth	3.4 mil	2011 July	6	No
YouthBuild International	Haiti	Provide employment training and job placement for youth	4 mil	2010 Oct	5	No

Financial Inclusion

Program	Location	Purpose	Funding	Start	Years	Concluded?
Aga Khan Foundation Canada	Tajikistan	Expand community-based savings groups	4 mil	2009 Jan	5	No
BRAC	Uganda	Support and document the impact of BRAC microfinance	45 mil	2011 April	7	No
BRAC Development Institute/ BRAC USA	Global (United States)	Test a new model to move people out of extreme poverty	1.3 mil	2008 Oct	3.5	Yes
Calmeadow Higher Education Finance Fund	Global (Costa Rica)	Technical assistance to develop, test, and document innovative microfinance products for higher education financing	600,000	2011 May	5	No
Catholic Relief Services MISION Africa	Kenya, Uganda, Ethiopia, Benin, Burkina Faso, Senegal	Expand social performance management	1.7 mil	2011 Sept	3	No
Center for Financial Inclusion	Global	Promote and institutionalize client protection in microfinance	4.3 mil	2013 Jan	3	No
Consultative Group to Assist the Poor	West Africa	Expand branchless banking and inform industry practice through client research	11.4 mil	2012 June	4	No
Equity Group Foundation Financial Literacy	Kenya	Expand financial education to youth and women	10.9 mil	2009 Dec	3.5	Yes
Freedom from Hunger	Mali, Ecuador	Provide microfinance services and financial education to youth	4.4 mil	2009 Dec	3	Yes
GSMA Foundation: Mobile Money for the Unbanked	Sub-Saharan Africa	Generate best practices to scale mobile financial services	3.8 mil	2012 May	3	No
GSMA: Mobile and Development Intelligence	Global	Develop the mobile and development intelligence web platform	1.5 mil	2012 Dec	3	No
Habitat for Humanity	Ghana, Uganda, Kenya	Provide access to housing microfinance products and support services to low-income households	6.6 mil	2012 July	5	No
International Finance Corporation	Sub-Saharan Africa	Increase financial services to 5.3 million unbanked people	37.4 mil	2012 Jan	5	No
Mennonite Economic Development Associates	Egypt and Morocco	Expand microfinance to young people	5 mil	2008 June	5	Yes
Microfinance Information Exchange Inc.	Global	Increase transparency in the microfinance industry and expand coverage in Africa	2 mil	2010 Sept	3	No
Microfinance Information Exchange Inc. II	Global	Promote responsible financial services to the underserved	6 mil	2012 Sept	4	No
Microfinance Opportunities	Global	Promote branchless banking	2.9 mil	2009 Oct	3	Yes
Microfinance Transparency	Africa	Improve pricing transparency in Africa	1.2 mil	2010 April	2	Yes
Opportunity International Canada	Sub-Saharan Africa	Expand access to microfinance in rural areas	8 mil	2009 Nov	4	No
PAMIGA	Mali	Test and demonstrate how consolidation can improve outreach	1 mil	2010 Nov	2	Yes
Plan Canada	Senegal, Sierra Leone, Niger	Provide microfinance services and financial education to youth	4.1 mil	2010 Jan	4	No
Save the Children Canada	Global	Study on youth savings	12.5 mil	2010 May	5	No
SEEP Network	Global	Create innovations in youth microfinance	2.8 mil	2009 Aug	3	Yes
SEEP Network: Strengthening Microfinance Industry	Sub-Saharan Africa	Strengthen microfinance associations	7.6 mil	2012 Feb	4	No
The Boulder Institute of Microfinance	Global (United States)	Develop innovative symposium on financial inclusion and update Boulder's microfinance programs	11.3 mil	2013 Jan	5	No
The MasterCard Foundation Microfinance Scholars Program	Global	Train microfinance professionals	3.9 mil	2008 Jan	5	No
UNCDF MicroLead	Sub-Saharan Africa	Increase access to microfinance, particularly savings services	23.5 mil	2011 Oct	6	No
UNCDF YouthStart	Sub-Saharan Africa	Spur innovation and delivery of microfinance for youth	12 mil	2010 Aug	4.5	No
Water.org	Kenya and Uganda	Test and document credit and savings products for water and sanitation	3.6 mil	2010 Oct	4	No

Figure B:

MasterCard Foundation Scholars Program Partners				
Partner (Location)	First Year	Duration in Years	Funding	Items of Note
African Leadership Academy (South Africa)	2010	2	1.65 mil	Annual Anzisha Prize of $70,000 for promising youth
Ashesi University (Ghana)	2011	9	13 mil	Curriculum designed in collaboration with faculty at Swarthmore College, University of California at Berkeley, and University of Washington; Study Abroad Program created in collaboration with New York University; TED talk; mandatory 4-year leadership seminar; honor code against cheating
American University of Beirut- Faculty of Health Sciences (Lebanon)	2011	8	9 mil	
Arizona State University (USA)	2012	7	27.5 mil	Hosted first Global Scholars Convening in April 2013; participates in 10,000 Solutions online, which hosts videos and ideas for global issues; Kenyan scholar began Mwanzo Mpya Africa to raise cancer awareness in Africa
BRAC Uganda (Uganda)	2013	8	46.7 mil	Secondary-school
CAMFED (Ghana)	2011	5	10 mil	Secondary-school
Duke University (USA)	2012	9	13.5 mil	Students participated in the One Billion Rising Campaign, dancing as a way to raise awareness about violence against women
EARTH University (Costa Rica)	2011	7	19.5 mil	
McGill University (Canada)	2013	10	27 mil	
Michigan State University (USA)	2012	9	45 mil	Summer internships for Africa to encourage "give back" ethos
Stanford University (USA)	2012	8	6.5 mil	Leadership Academy for African Development bi-monthly seminar to encourage students to "Go back" to "give back"
University of British Columbia (Canada)	2013	10	25 mil	
University of California, Berkeley (USA)	2012	8	30 mil	
University of Toronto (Canada)	2013	5	22.5 mil	
Wellesley College (USA)	2013	7*	?**	
				*Official Wellesley press releases did not outline a specific term for their partnership. Wellesley will welcome 3 new scholars each year for the next 3 years, totalling 9 students over a course of 7 years.
				**Official Wellesley press releases did not list funds received for their partnership.

The Survey

The next task was to administer a survey to the EARTH student body on an issue related to

Global Health and Sustainable Development, which would serve as a diagnostic tool for the

project. With the help of my mentor, B.K. Singh, and my supervisor, Ana Laura Dengo Flores, I

constructed an eight-page questionnaire to administer to EARTH's students. Coming as a

Borlaug-Ruan International Intern from the World Food Prize Foundation, I determined to make

the survey on general questions of food security, focusing particularly on nutrition, something

with very strong ties to both global health and sustainable development.

As stated by the official report on this survey, "EARTH University's student population is comprised almost entirely of individuals from developing countries in [Latin America, the Caribbean, and Africa]. Consequently, the purpose of our questionnaire was to learn about food security issues that the students may have experienced and/or observed in their hometowns before coming to study at EARTH. Given that students at EARTH are being trained to become agents of change in the fields of agriculture, animal production and sustainable development, it is imperative that they reflect about food security issues and the related health consequences, as well as start proposing solutions to these world-wide problems" (Flores, 2013).

Participants: 114 students (n=38 female and n=76 male) enrolled at EARTH University during July-August 2013 volunteered to participate in the study. The total student population during this period was comprised of 421 students from 33 countries (USA n=1, Mexico n=26, Central America n=187, Caribbean n=25, South America n=131, Africa n=50 Lebanon n=1). We surveyed 27% of the student population from 21 countries (Mexico n=5, Central America n=57, Caribbean n=5, South America n=35, Africa n=12).

Food Security and Health Questionnaire (Appendix A): The questionnaire is composed of two sections. The first part of the questionnaire was developed by our research team, and validated with students (n=10) prior to applying the questionnaire to the general student population. This section includes questions about: staple foods, crops, intake of fruits and vegetables, diet composition, food security, and nutritional and medical issues in the community. The second part (optional completion) was composed of the 6-item Food Scale Short Form from the U.S. Household Food Security Module (Economic Research Service, USDA, 2012), which was developed by researchers at the National Center for Health Statistics. Only 6 participants did not complete this section. It should be noted that since all students at EARTH 6 live on campus and

have a complete meal plan, they were asked to interpret the 6-questions with regards to the year before coming to EARTH.

Statistical Analysis: STATA 11.2 was used for all statistical analyses. Descriptive statistics were calculated for all variables. Chi-squared analyses were performed to explore relationships between categorical variables of interest. As recommended on the instructions for the 6-item food security survey, the Rasch measurement model was used to convert affirmative scores into scale (interval) scores. ANOVA tests were conducted to determine possible differences in the means according to sex, region of origin, and type of community. Ordered logistic regression analyses were also performed. Statistical significance was set a priori at p<0.05. Though I performed the data collection and additional processing, my supervisor, Ana Laura Dengo Flores, is responsible for all statistical analysis executed in this project.

Observations:

Figure C, on the following page, documents the characteristics of sample (n=114). It should be noted that the "Level of food security" was determined by the 6-item Food Scale Short Form on the questionnaire, which 6 students chose not to complete. Therefore, sample (n=108) is the population examined for level of food security. *Figure C* outlines some important conclusions: males with very low food security is well above average for the distribution by sex. Further, students from Central America and the Caribbean display higher levels of food security than those who hail from South America in Africa. Notably, most individuals determined to have "very low food security" are from rural areas.

Figure C:

Variable	Female (n=38)	Male (n=76)	Total (n=114)
Age, years (mean ± SD)	21.1±1.9	21.9±2.4	21.6±2.3
Year of study, n (%)			
-First	11 (29.0)	16 (21.1)	27 (23.7)
-Second	5 (13.2)	16 (21.1)	21 (18.4)
-Third	2 (5.3)	10 (13.2)	12 (10.5)
-Fourth	20 (52.6)	34 (44.7)	54 (47.4)
Region of origin, n (%)			
-Africa	1 (2.6)	11(14.5)	12 (10.5)
-Mexico, C.America, Caribbean	19 (50.0)	48 (63.2)	67 (58.8)
-South America	18 (47.4)	17 (22.4)	35 (30.7)
Type of community, n (%)			
-Rural	13 (34.2)	35 (46.1)	48 (42.1)
-Urban	25 (65.8)	41 (53.9)	66 (57.9)
Level of food security, n (%)			
-High	20 (54.1)	34 (47.9)	54 (50.0)
-Marginal	2 (5.4)	7 (9.9)	9 (8.3)
-Low	13 (35.1)	16 (22.5)	29 (26.9)
-Very Low	2 (5.4)	14 (19.7)	16 (14.8)

Figure D, below, illustrates what respondents considered to be the reasons for food security in their place of origin. Though one respondent answered, "Don't Know" (DK), the most common response was "Financial Insecurity". This confirms wide assumptions that food security is not about whether or not there is enough food in the world, but whether or not it is accessible to all.
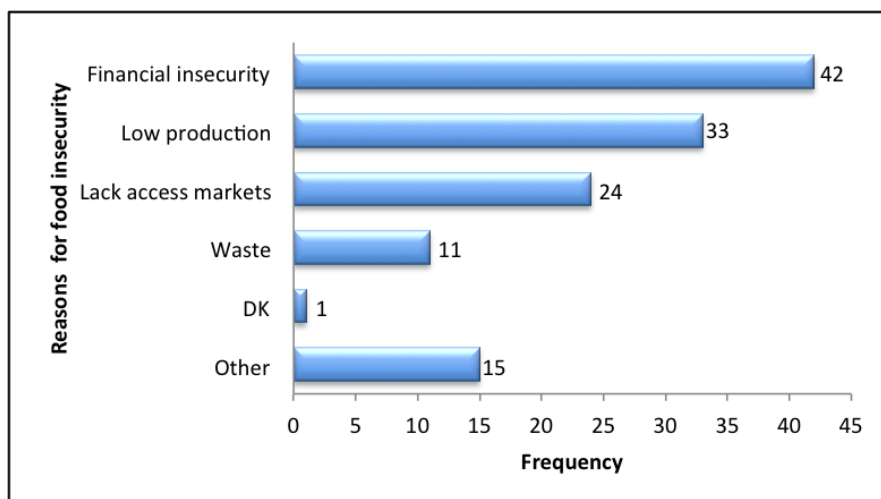
Figure D:

14

Figure E is based on the question, "What would you propose as a change in your community in order to confront food security issues?**"** The solutions proposed by EARTH students are particularly interesting, as all respondents are to-be experts in the field of agricultural engineering. Responses were categorized into general and more specific categories based on short answers on the questionnaire. Notably, the most common response involved "more internal agriculture". Many responses advocated for higher responsibility within small communities for the production of their own food, and less dependence upon outside markets.

Figure E:

Category	Grouped answer	Frequency
Agriculture	More internal agriculture	14
	Increased production	9
	Native cultivation	7
	Sustainable systems	7
	Periurban agriculture	3
	Crop diversification	2
	Transgenic foods	1
	Herbicide use	1
Health/Nutrition	Better nutritional quality of foods	4
Education	Education	10
	Technical assistance	3
Economics	Smallholder financing	8
	Equitable distribution	6
	Agriculture bank	2
Politics	Establish access to markets	4
	Governmental powers	3

Figure F and *Figure G,* on the following page, determine what respondents consider to be the most common nutritional and medical issues (respectively) in their places of origin. Interestingly enough, the most common response regarding nutritional issues was "Don't Know" (DK). This shows a lack of awareness of nutrition as a field, and emphasizes the important of an academic program that addresses nutrition and its importance to food security. In *Figure G*, the most

common response was "non-communicable diseases". This confirms concerns of the growing

food security issues in Latin America regarding overnutrition and obesity that leads to diabetes.
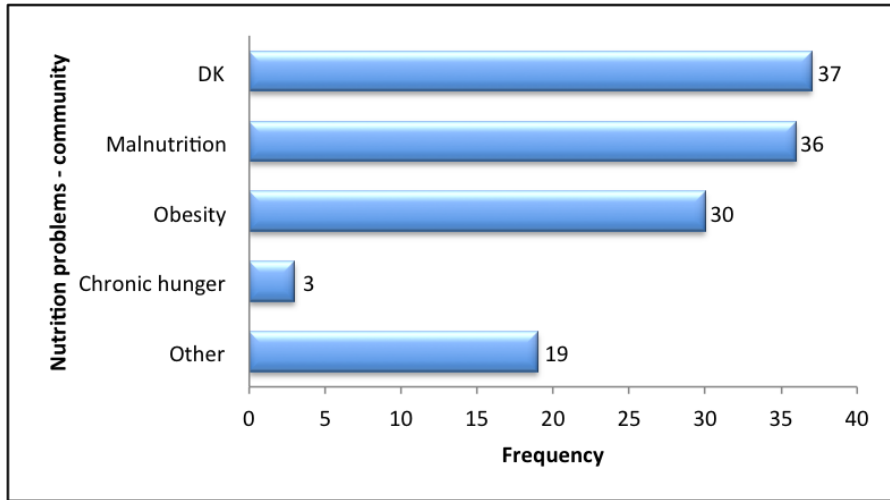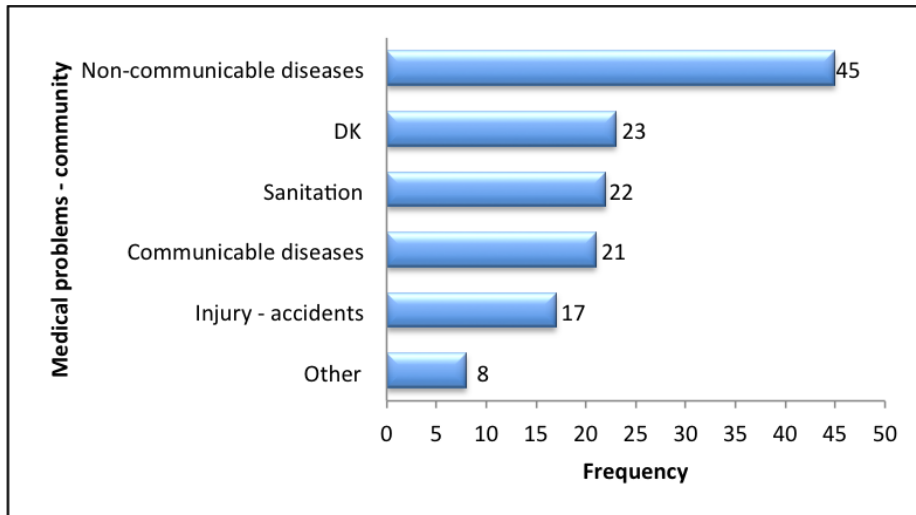
Figure F:

Figure G:

Figure H, on the following page, is based on student proposals to confront health issues in their

communities. As with *Figure E*, respondents provided short answers which were categorized.

The most common responses involved in some way improving nutrition within places of origin.

When compared to the data in *Figure F*, this is interesting; many students advocate better nutrition, but do not know the top nutritional issues in their community.

Figure H:

Category	Grouped answer	Frequency
Health systems	Improved health systems	13
	Wider health coverage	5
Agriculture/Nutrition	Better nutrition	17
	Sustainable systems	4
	Organic food	3
	Cleaner food	1
	Periurban agriculture	1
	Genetically modified foods*	1
Education	Education	13
Other	Waste management	6
	Lower chemical use	4
	Private investment	2
	Remove political barriers	2

Conclusions

Both the matrices and the survey as parts of my research provided valuable conclusions regarding the Global Master's Program in Health and Sustainable Development. The matrices displayed that the Global Master's Program would be largely in accordance with the MasterCard Foundation's other projects around the globe, including its MasterCard Scholars initiative. The survey illustrated the prevalence of food security at EARTH and to the students that the university serves. This demonstrates a need for a program that will address food security, especially with regards to global health and sustainable development. The Global Master's Program intends to do just that. Thus, in my short time working on the project, I would determine that the Global Master's Program in Health and Sustainable Development is not only something that is feasible, but also necessary, at EARTH University and AUB.

Personal Experience:

It goes without saying that my Borlaug-Ruan International Internship was a fantastic experience. My research served to accustom me to working in academia, and I got to share space for two months with some brilliant minds, but by personal development was by far the greatest benefit that I received from this internship.

In addition to doing research at EARTH every day, I took on a good number of other responsibilities. I became a teaching assistant for English at EARTH University, working often with professors and students in order to enhance the classroom experience with a native speaker present (me). I was a classroom teaching assistant for fourth year students, I led a weekly study-group for second year students, and I dined nightly with first-year students of English. I found that teaching English was one of the most rewarding experiences of being at EARTH. My time spent doing so was incredibly valued, but also fun.

Another experience I had involved a local orphanage. Orphans from a local town occasionally visit EARTH on field trips, and a student group at the university cares for them for the day, taking them to the academic farms (*fincas*), the pool, and to lunch. I became involved in this group, making new friends in both the students and the young orphans. This activity was something that really humbled me. I won't forget when my new friend Jorge, an orphaned five-year-old with a lame leg, informed me that he wanted to travel to the United States when he was older so that he could study to be an astronaut. It was a fanciful dream, something that should have made me laugh, but I encouraged *Jorgito* to pursue his dreams anyway. He asked me how many times I had been to space.

One of my most fabulous adventures was to an indigenous village on the border with Panama, in the native Bribri region of Talamanca. There, I met the native people, spent the night

in their village, and learned their stories. The Bribri were once a people with a dying language and culture, but after gaining access to microfinance through a women's organization in one of their villages, the Bribri were reinvigorated through ecotourism and organic farming. It was a story of triumph for the Costa Rican model of "eco-development", and it was very educational to see it in action. This is a story that I've been able to take back with me to the United States with a new perspective.

Most importantly, I think that my journey taught me something about myself. I learned what it meant to be alone in a foreign place. I had to work hard in order to adjust to the language, the lifestyle, and my new expectations of myself. In the middle of the *selva*, the rainforest, surrounded by so much natural beauty, I became more in touch with who I was, what I wanted in life, and where I was going to go next. Today, I can't imagine leading a life that doesn't do something to help others around the world. Now, more than ever, I must become someone that leaves a positive impact, and does so ethically. EARTH University, Costa Rica, and the World Food Prize will continue to play a role in my life as I move forward from this experience, forever a part of my moral compass.

Appendix A: The Food Security Questionnaire

Food Security Questionnaire

Definition:

Food security is, as defined by the World Food Program 2013, "all-time access to sufficient, safe, nutritious food to maintain a healthy and active life."

Objective:

- Attain a general assessment of food security issues in students' countries of origin (Latin America and Africa).

The Master's Program:

The Global Master's Program in Health and Sustainable Development is an undertaking by EARTH University and American University of Beirut's Faculty of Health Sciences that aims to form ethical agents of change who will strive to promote justice in global health. The food security survey will:

- Contribute to a fuller understanding of the health context in Latin American and African countries from the perspective of possible stakeholders (students) in the program.
- Explore the knowledge, skills, and attributes of potential graduate students of the program with regards to food security and health issues.
- Contribute to the development of country profiles on food security issues.

What is your country of origin?

_____

Are you…

[ ]Male [ ] Female

What is your age?

_____

What year are you in university?

_____

What is the best way to describe the kind of community you come from?

[ ]Rural [ ]Urban

1. What are the staple foods in your home community?

[ ]Rice

[ ]Beans

[ ]Corn

[ ]Plantain

[ ]Cassava

[ ]Millet

[ ]Other_____

[ ]N/A

2. Are there any crops that are wasted or underused in your community? If so, which one? Explain why.

[ ]Yes

_____
_____
_____

[ ]No

[ ]N/A

[ ]I Don't Know

3. Does your community grow a cash crop that you can't eat for nutrition (cocoa, coffee, cotton, etc.)? If so, what is/are the crop(s)?

[ ]Yes _____

[ ]No

[ ]N/A

[ ]I Don't Know

4. Before coming to school/university, how many times did you eat fruits per day?

[ ]1

[ ]2

[ ]3

[ ]4

[ ]5+

5. Before coming to school/university, how many times did you eat vegetables per day?

[ ]1

[ ]2

[ ]3

[ ]4

[ ]5+

6a.Before coming to school/university, do you believe you had a variety of foods in your diet?

[ ]Yes

[ ]No

[ ]I Don't Know

6b. If not, what foods were/are lacking?

[ ]Red Meats

[ ]White Meats

[ ]Fish

[ ]Fruits

[ ]Vegetables

[ ]Nuts

[ ]Dairy

[ ]Other_____

[ ]N/A

7. Approximately what percentage of your food is home grown?

____%

[ ]I Don't Know

8a. Does it seem as though members of your community have issues attaining food security (making sure everyone can eat without hunger or malnutrition)?

[ ]Yes

[ ]No

[ ]I Don't Know

8b. If so, what do you consider to be the main food security issues in your community?

[ ]Low Production

[ ]Waste

[ ]Financial Insecurity

[ ]Lack of Access to Markets

[ ]Other_____

[ ]N/A, Food Security is Not a Problem in my Community

9a. In your community, is there adequate grain storage that keeps grains safe and well-preserved?

[ ]Yes; community storage

[ ]Yes; individual storage

[ ]No

[ ]I Don't Know

[ ]N/A

9b. Does your household have adequate refrigeration to keep food like produce well-preserved?

[ ]Yes

[ ]No

[ ]I Don't Know

10. How close is the nearest market/store where you can find fresh produce? 1 meter is approximately 3.3 feet.

[ ] Less than 500 meters

[ ] 500-1000 meters

[ ] 1000-1500 meters

[ ] Over 1500 meters

[ ] I Don't Know

11. Would your community be open to genetically modified organisms or biofortification of crops as means of improving nutrition?

[ ]Yes

[ ]No

[ ]I Don't Know

12. What would you propose as a change in your community in order to confront food security issues?

_____
_____
_____
_____
_____

13. What are the top nutritional problems in your community?

[ ]Chronic Hunger

[ ]Malnutrition

[ ]Obesity

[ ]Other_____

[ ]I Don't Know

14. What are the top medical problems in your community?

[ ]Communicable Diseases (Malaria, HIV, etc.)

[ ]Noncommunicable Diseases (Diabetes, cancer, etc.)

[ ]Poor Sanitation

[ ]Injury/Accident

[ ]Other_____

[ ]I Don't Know

15. Do you consider food safety an issue in your community (excessive use of pesticides, chemicals, etc.)? If so, name examples.

[ ]Yes

_____
_____

[ ]No

[ ]I Don't Know

16. What would you propose as a change in your community in order to confront health issues?

_____
_____
_____
_____
_____
_____

The following questions are optional. Due to the personal nature of the questions, they are not a necessary part of this survey. However, your answers are completely anonymous and it would be highly appreciated if you complete the survey in full. These questions are based off a USDA Food Security Survey Module (2012). Interpret all statements with regards to the year before you came to school/university.

17. "The food that we bought just didn't last, and we didn't have money to get more." Was this <u>often</u>, <u>sometimes</u>, or <u>never</u> true for your household in the year before you came to school/university?

[ ]   Often true
[ ]   Sometimes true
[ ]   Never true
[ ]   Don't Know

18."We couldn't afford to eat balanced meals." Was this <u>often</u>, <u>sometimes</u>, or <u>never</u> true for your household?

[ ]   Often true

[ ]   Sometimes true

[ ]   Never true

[ ]   Don't Know

19a. Did anyone in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

[ ] Yes

[ ] No (Skip 19b)

[ ] Don't Know (Skip 19b)

19b. How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

[ ]   Almost every month

[ ]   Some months but not every month

[ ]   Only 1 or 2 months

[ ]   Don't Know

20. Did you ever eat less than you felt you should because there wasn't enough money for food?

[ ]   Yes

[ ]   No

[ ]   Don't Know

21. Were you ever hungry but didn't eat because there wasn't enough money for food?

[ ]   Yes

[ ]   No

[ ]   Don't Know

References

Abu-Saifan, S. (2012, February). *Social Entrepreneurship: Definition and Boundaries.* Retrieved from Technology Innovation Management Review web site: http://timreview.ca/article/523

EARTH University. (2013). *About EARTH*. Retrieved from EARTH University web site: http://www.earth.ac.cr/about-earth/?lang=en

Economic Research Service, USDA. (2012, September). *U.S. Household Food Security Survey Module: Six-Item Short Form.* Retrieved from Economic Research Service, USDA web site: http://www.ers.usda.gov/datafiles/Food_Security_in_the_United_States/Food_Security_Survey_Modules/short2012.pdf

Flores, A. L. (2013). *Food security amongst students at EARTH University.*

Koplan, J. P., Bond, T. C., Merson, M. H., Reddy, K. S., Rodriguez, M. H., Sewankambo, N. K., & Wasserheit, J. N. (2009). Towards a common definition of global health. *The Lancet*, 1993-1995.

Mezirow, J. (2000). *Learning as Transformation.* San Francisco: Jossey Bass.

The MasterCard Foundation. (2013). *The MasterCard Foundation*. Retrieved from MasterCard Foundation web site: http://www.mastercardfdn.org/

The World Commission on Environment and Development. (1987). *Our Common Future.* Oxford: Oxford University Press.