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EARTH University Educational Model:
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Abstract. Education is the most powerful tool to transform a society, especially if we want to meet the needs of the 21st century. However, an education means more than going to school; it also includes what and how students learn. Education should be about empowering the student, encouraging questions and criticisms and providing students with opportunities to discover knowledge on his or her own. The student should be the center of the leaning process; professor should become a facilitator of the learning process in a participatory and experiential manner.

For the past 25 years the EARTH University –a private, non profit, international university located in Costa Rica– educational model has implemented this innovative methodology in accordance with its unique mission "to form ethical leaders for sustainable development and construct a prosperous and just society". The EARTH model focuses on four formative areas: scientific and technical knowledge, social and environmental awareness, ethics and values and entrepreneurship. Nearly 2,000 professionals from almost 30 countries in the Americas, the Caribbean, Africa, Asia and Europe have graduated from the EARTH model in this time. This article presents the EARTH case as a model for study.

Keywords. Educational Model – EARTH University – Experiential learning – Values – Entrepreneurship.

Le modèle éducationnel de l'Université EARTH : cas d'étude pour les modèles d'enseignement agricole pour le XXIe siècle

Résumé. *L'enseignement est l'outil le plus puissant pour transformer une société, en particulier s'il s'agit de répondre aux besoins du XXIe siècle. Toutefois, l'éducation signifie bien davantage que le fait d'aller à l'école, car elle comprend également ce que les étudiants apprennent et comment ils l'apprennent. L'éducation devrait viser à rendre l'étudiant autonome, à encourager le questionnement et la critique et à apporter aux étudiants des opportunités pour découvrir le savoir par eux-mêmes. L'étudiant devrait se trouver au cœur du processus d'apprentissage et le professeur devenir un encadreur du processus d'apprentissage sur un mode participatif et expérientiel.*

Lors des 25 dernières années, dans le cadre de son modèle éducationnel, l'Université EARTH, une université privée, à but non lucratif, internationale, située au Costa Rica, a mis en place cette méthodologie novatrice conformément à son unique mission qui est de former des leaders éthiques pour un développement durable et pour la construction d'une société prospère et juste. Le modèle EARTH est axé sur quatre domaine de formation : savoir scientifique et technique, sensibilisation sociale et environnementale, éthique et valeurs et esprit d'entreprise. Sur cette période, près de 2 000 professionnels de presque 30 pays d'Amérique, des Caraïbes, d'Afrique, d'Asie et d'Europe ont obtenu leur diplôme selon le modèle EARTH. Cet article présente l'exemple de EARTH comme modèle d'étude.

Mots-clés. *Modèle éducationnel de l'Université EARTH – Apprentissage par l'expérience – Valeurs – Esprit d'entreprise.*

I – Introduction

An urgent transformation of existing higher education in agriculture programs is needed to lead about the way toward meeting the needs of agriculture in the 21st century. However, much of what passes for education today is not up to the task. Too many graduates are simply not prepared to meet the challenges they will face once they complete their studies. A new approach is essential for transformative education and providing young people with the awareness and skills needed by the emerging paradigm.

Several failures of the traditional agricultural educational model have come to light in recent years. For one, up until this point, the traditional method of agricultural education in many countries has been primarily theory-based and emphasized the role of the professor. Secondly, for several consecutive decades young peoples' interest in a career in agriculture was declining. Those who did pursue agriculture at the university level would very often work with the extension programs of the ministry of agriculture of his or her country. Accordingly, institutions of higher education in agriculture prepared students with a skill set to meet the demands of the sector they expected to serve. Nowadays, university graduates in agriculture expect to find work in the private sector and the need for enterprising individuals who will start their own projects is on the rise. This reality requires that graduates possess different skill sets than those of the past. Unfortunately, a gap exists between demand and supply as many universities have not evolved their educational models to account for the demands of today's labor market and innovative sector.

Another failure of current agricultural educational models lies in unequal access to a university education. Under the current model, student selection is based upon the results of an entrance exam. An inherent bias in this system favors students of a privileged academic background. Young men and women with poor educational backgrounds, often linked to a low socio-economic status, cannot compete with the test scores of their academically well-prepared peers and therefore miss out on the opportunity to pursue higher education. Unfortunately, this measurement does not factor in the potential for success or vocation of the student candidate. There many young hopefuls that dream of deepening their knowledge and experience of agriculture and who do not get the chance. Therefore, those individuals with the greatest access to education continue to benefit from it and those with the least access to it continue to be left out. The impact of this effect extends beyond the students alone. Taken into the broader context, this has repercussions for the entire community. In order to ensure greater equality in admissions to universities a serious revision of the selection processes must be undertaken.

There is clearly a need to transform the predominating agricultural educational model. Looking forward to the next 20 years, the need for this transformation will be all the more necessary. How can this be achieved?

II – The EARTH University model – Curricular pillars

For twenty-five years EARTH University–a private, not for profit, international university located in Costa Rica– has taken a unique approach to prepare leaders and agents of change in agriculture and the natural sciences for the 21st century.

The EARTH educational model takes an integrated and holistic approach to agricultural education. EARTH graduates are prepared to respond to society's need for a highly qualified professional in agriculture and natural resource management, with a solid base in technical and scientific knowledge and skills, as well as a developed social and environmental awareness and commitment, attitudes and values for effective leadership, and an entrepreneurial mentality. These competencies represent the four formative areas of EARTH's unique educational model. They are closely interrelated and constitute the structural pillars of the curriculum.

Scientific and technical knowledge: This area consists of the knowledge, abilities and skills that taken together give an EARTH graduate the technical competence required for the sustainable management of agriculture and natural resources. Development in this area is accomplished largely through active participation in the courses which comprise the formal plan of studies.

Social and environmental commitment and awareness: Developing students' sense of social and environmental responsibility and strengthening their capacity as leaders to promote positive change is an essential part of the educational experience at EARTH. This takes place both in the classroom and in the field, through the participation and involvement of students in experiential activities with communities and social development projects, in diverse co-curricular activities, in institutional programs and projects, and as volunteers in local and regional projects.

Ethics and values: This area involves the development of intrapersonal and interpersonal competencies that help students become effective leaders. Among these competencies are self-awareness, empathy, respect, tolerance, teamwork skills, effective communication, and becoming an autonomous, lifelong learner. This area also includes understanding and putting into practice values and attitudes that promote dialogue, peace, and understanding among people from differing backgrounds. This is accomplished in part by taking advantage of opportunities for dialogue, inside and outside the classroom, through participatory activities designed to inspire reflection, and the experience of living for four years in a multicultural environment. It is also accomplished through the formal plan of studies, in courses that include activities that deliberately encourage students to develop these abilities. Faculty and staff reinforce University values through role modeling. In this way, everyone at the institution contributes to the personal and professional development of the students.

Entrepreneurial mentality: This area involves helping students access the knowledge, skills and experience required for successfully managing enterprises as well as developing an entrepreneurial spirit. This is accomplished partially through the Entrepreneurial Projects course, a multi-year program that offers students the opportunity to conceive, develop and implement a business, assume risks and make responsible decisions in order to generate economically sound, socially and environmentally responsible products and services. Through this course, students develop the capacity to evaluate, plan, organize, administer, and take advantage of opportunities.

III – Experiential and Student-Centered Learning

Equally as important as *what* students learn is *how* they learn it. Transformative education is a participatory and experiential process. Students must take an active role in their own learning. A student-centered approach places the focus on *student* learning. Faculty are facilitators of discovery processes. This differs from the traditional university model in which the professor is the subject expert and he or she imparts knowledge to the student through lectures and assigned readings. Whereas classes in a traditional university setting take place principally in the classroom and are largely theoretical, in a transformative education context, learning takes place beyond the walls of the classroom or even the University itself.

At EARTH, learning is largely based on lived experience and practice and validated by theory. Courses bring students into contact with laboratory and field laboratory experiences, visits to farm and business operations, business management and operations, community development work, an internship experience, and research. EARTH's two campuses –one in the heart of the humid tropics and second campus in the dry tropics– offer students a unique and complementary educational opportunity. This format provides context from within which students can frame theoretical concepts.

Within the structure of the EARTH curriculum, students in their first year begin to develop an awareness of the complexity of systems and the role that people play in them. At the same time, emphasis is placed on the development of fundamental abilities and positive attitudes toward work. Later, in the second and third years of study, courses increasingly concentrate on the parts of the system and well-defined and specialized technical skills, but without losing sight of the whole. During their fourth year, the focus of the students' studies returns to a global vision, but emphasizes the role that they will play as future professionals.

By the time that EARTH students graduate they are well prepared for a career in much more than what has traditionally been thought of as agriculture. Curriculum reviews ensure that the experiences and content of the students' education remain relevant and anticipate the future needs of the field and society. Sustainability, clean energies, water and biodiversity management, environmental services, value added, and other related topics enter into the EARTH plan of studies. As a result, 94% of EARTH graduates report to be working in a field related to their study. Equipped with skills and knowledge of how to bring sustainable development to their communities, they return home eager to assume their role as leaders of change.

Other elements of the EARTH University educational model include elements of EARTH's activities. For example, EARTH has a commercial branch that provides a living example of a successful, sustainable business right on campus. From its inception, EARTH took an innovative approach to commercial banana production in a bold step to demonstrate to its students and the banana industry the compatibility of responsible production and profitability. EARTH began progressive programs to manage wastes produced by the banana operation. These include: production of banana fiber paper, recycling of the plastic used in the field, the development of an innovative water filtration system in the packing plant, and the transformation of organic waste into natural fertilizer. Apart from having become the norm in many commercial banana operations, these innovations have also been promoted by EARTH graduates around the world.

EARTH's research initiatives offer other examples of how the University puts into practice what it teaches. *Chagas* is a lethal disease that affects 16 million Latin Americans, especially the poor, each year. EARTH University and its partners –the National Institute of Parasitology (Argentina), the University of Santiago (Chile), the Catholic University of the North, Antofagasta (Chile), National University of Costa Rica, the National Institute of Biodiversity (Costa Rica), the University of the Republic of Uruguay, the Center of Biophysical Sciences and Engineering and the University of Alabama (USA), and NASA– created the ChagaSpace Project to find natural extracts from species of the humid tropics that block the enzymes of the parasite that provokes this illness, which can be found in many of the communities from which EARTH students come.

EARTH's students come from over forty countries in the Americas, the Caribbean, Africa, Asia, and Europe. The University's admission process is intensive and effective; EARTH faculty invest significant time to travel to remote communities around the globe to promote EARTH and later to conduct interviews with student candidates. Based on an evaluation of the vocation, leadership potential and attitudes and commitment to improving their community's quality of life during a personal and group interview, faculty select approximately 110 students to be admitted to the University each year. Admittance to EARTH is not limited by an entrance exam or the capacity to pay tuition. In fact, to ensure that EARTH gives the opportunity to pursue a higher education to those with least access to it, 70% of EARTH students receive full scholarships (20% receive partial scholarships, and only 10% are full-paying students). This intensive process yields good results; EARTH has a retention rate of 86%. EARTH students are motivated and through their experiences at the University they gain confidence and enthusiasm to take on projects back home.

IV – Conclusion

EARTH graduates are bringing sustainable development to their communities, transforming practices and changing minds, all while redefining what "agriculture" means. In 2015 EARTH University is celebrating 25 years of illuminating lives through its innovative, participatory, and experiential model. Today more than ever EARTH's educational model is seen as a vehicle for transforming higher education in agriculture. Universities have the distinct privilege and responsibility to prepare graduates to meet the challenges of the 21st century. To do so, the university must be prepared to take on the challenges of this young century. Is what universities are teaching, and perhaps more importantly, HOW they are teaching today preparing the leaders of tomorrow? Now is the time to reflect on this and determine if agricultural universities are sharing the tools that the future leaders in agriculture need to create a world in which peace, justice, and prosperity prevail for all.

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