Theory of Change for Transforming Higher Education

Project Narrative

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Introduction to the Theory of Change

The theory of Change is a methodology that was developed to assist in understanding and explaining how change takes place and how the interventions lead to desired outcomes and goals. "Theory of Change is essentially a comprehensive description and illustration of how and why the desired change is expected to happen in a particular context. It is focused in particular on mapping out or "filling in" what has been described as the "missing middle" between what a program or change initiative does (its activities or interventions) and how these lead to desired goals being achieved. It does this by first identifying the desired long-term goals and then works back from these to identify all the conditions (outcomes) that must be in place (and how these related to one another causally) for the goals to occur. These are all mapped out in an Outcomes Framework." (Theory of Change Community, 2020a). This process forces project planners to think about how change takes place and what are the outcomes necessary at each stage of the change process necessary to reach the specified goals. Traditionally projects have focused on the initial stages and the activities it plans to carry out, and the implementation of those plans, and not as much on whether the interventions will lead to the outcomes or long-term goals. The Theory of change should be based on the demonstrated hypothesis of interventions leading to specific changes (Reinholz and Andrews, 2020).

Development projects attempt to contribute to achieving long-term development goals, by the implementation of their strategy and actions. The process of developing the theory of change is to specify the goal, and then working backward, specify the outcomes or preconditions[3] at each stage of the process, over the Intermediate and short terms. The pathway to change is specified in the Conceptual Map which includes at a minimum the goals, outcomes (or preconditions) at each stage, the strategy, and arrows representing the flow paths from one stage to the next and the relationship between each precondition. It is recommended that actions that will lead to the outcome at each stage be included, as well as other partner strategies, when possible. However, because of the complexity of these processes, it is not always possible to include all of this information in the Conceptual Map so that it is simple to see and understand. There are as many creative styles of Conceptual Maps found in the literature, the most common being the linear map from top to bottom or bottom to top. There is no preferred recommended style.

The Theory of Change should also include a complementary narrative to the Conceptual Map. This allows a much more complete explanation of each of the components. The narrative for the Transforming Higher Education Project is presented here and includes the following components in the order presented: Situation or context analysis; Goal; Outcomes along the pathway found in the Conceptual maps; Strategies for producing change; Assumptions; and

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[3] Theory of Change uses the term preconditions for all but long-term outcomes as conditions that must be reached before the next outcome can be achieved. According to the Theory of Change Community "They are called preconditions because they are conditions that must exist in order for the next outcome in the pathway to be achieved. You can think of them as precursors because they must be achieved before the next outcome in the pathway, and as requirements for the accomplishment of the next outcome." (2020b).

Progress markers or indicators to determine when outcomes have been successfully reached. The narrative makes specific reference to the Transforming Higher Education project throughout the document.

The Theory of Change is generally carried out during the project planning process. It identifies the changes or outcomes that are necessary during different stages to achieve the project goals. For project management and implementation, action plans must be developed at each stage of the process to specify the planned activities that will be carried out and the expected outputs that will lead to the desired outcomes as laid out in the Theory of Change, along the change pathway. Therefore, yearly planning stipulates the activities and time that activities will be carried out what are the expected outputs of the activity. These outputs are key to achieving the specific outcomes along the change pathway. Therefore, you can specify milestones which are indicators of key events, activities and achievements which denotes whether you are implementing the project as planned. For the Theory of Change, you should define progress markers which are indicators that let you know whether an outcome has been achieved. Milestone indicators and progress markers are complementary indicators useful in the implementation of your project.

Situation or Context Analysis

Humanity is facing ever greater challenges during the 21st Century including corruption and ethics in leadership, increasing inequity, and access to resources, climate change, deforestation, environmental degradation, ever greater shortages of potable water, pandemics such as the COVID-19, access to and impacts of new technologies and access to education, knowledge, and information.

Young people have a strong desire to respond to these challenges and to help shape a just and sustainable society. However, they need to be empowered with the appropriate tools to achieve their full potential.

Universities play a significant role in educating future leaders and change-agents needed to address the 21st Century challenges. Education is the greatest tool for the advancement of individuals and societies. Committed universities must prepare graduates capable of acting as agents of change, focused on solving sustainability challenges and quality of life issues. For hundreds of years, universities have done an excellent job advancing science and the adoption of knowledge, which is so important for humanity. They have advanced science and technological innovation, graduated quality professionals, and contributed to the development and well-being of communities and nations.

The United Nations have developed 17 Sustainable Development Goals (SDGs) and related targets aimed at overcoming the challenges of the 21st century (https://www.un.org/sustainabledevelopment/sustainable-development-goals/). Universities globally consider that they have essential contributions to make to achieve these goals through

research and education. The fourth SDG is Quality Education which focuses on offering universal access to quality education, regardless of gender, ethnicity or economic background (https://www.un.org/sustainabledevelopment/education/). Levi and Rothstein stress that "To increase the likelihood of success for these 17 SDGs, higher education institutions worldwide must teach and train today's students – tomorrow's decision-makers – to think both critically and ethically, to learn to cope with ethical dilemmas and apply systems-thinking approaches to serious and complex societal problems." (2018). As ethical leaders, our graduates should value honesty, integrity, equality, our natural resources such as water, air, and soils, and through their ethical leadership contribute to the Sustainable Development Goals.

However, more and more universities have become driven by their research mandate at the expense of their educational and outreach responsibilities. Faculty behavior is driven by a tenure and promotion system which expects and rewards research output in detriment to those that strive for excellence in teaching, acting as a barrier to improved, student-centered pedagogy that enhances learning. Some universities have responded to this by including scholarship in teaching as an additional component of tenure and promotion decisions (see the case of the University of Wisconsin found in National Research Council, 2009, p. 62).

Today's undergraduate students of agriculture have a more diverse background and interests than in the previous century. Many come from non-agricultural backgrounds and are interested in a profession or field that satisfies their personal interest and offers them the capacity to make a living (National Research Council, 2009). There is a need for undergraduate education to evaluate the degree of relevance of their undergraduate programs, based on the background and interests of their undergraduates. There is more interest now in science, technology and agricultural business courses, and less in general agriculture programs. Also, because agricultural universities have in many cases been swallowed up by urban centers around the world, there is less opportunity for practical and community-based learning. So students oftentimes, have a great theoretical understanding of their fields of study, but may not feel fully prepared to begin their professional careers, because of a lack of practice. They are eager to make contributions to creating a better world but often feel ill-prepared to do so.

Although universities have sought to include the UN Sustainable Development Goals (SDGs) in their curricula, they do not regularly include the education of human values and ethics as part of their educational systems. Levi and Rothstein call on universities to educate ethical leaders, and to do so "Universities need to start to become ethical leaders by looking first at themselves." (Levi & Rothstein, 2018). Given the high levels of corruption found in the private and public sectors today and the university role in graduating leaders in their respective fields, universities must ensure that the education of strong value and ethical based leadership skills be included in their educational models. Values such as integrity, honesty, respect of others cultures, ethnicities, and gender equality should be emphasized across the university experience, in classes as well as extra-curricular activities. The Quality of Education SDG sets as target number seven "By 2030, ensure that all learners acquire the knowledge and skills needed

to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" (https://www.un.org/sustainabledevelopment/education/).   If universities are to play the role expected of them, they should create a culture that models and stresses clear values and ethical behavior throughout as the best means of cultivating values and ethical leadership among their students.

Universities are facing ever-increasing criticism for being slow to change curriculum and pedagogy in response to advances in knowledge and communication over the past several decades. For centuries the dominant pedagogical model takes the university professors as the sole repository of knowledge and the student as a vessel to be filled with that knowledge, dominated by lecture settings, creating a passive learning environment. Clearly, this is no longer a viable educational model in today´s world where knowledge and information are widely available and students need to become more active learners to further their future professional success. Universities should reform their curricula and pedagogy to reflect this reality. They need to transform their educational models and institutional cultures to become inclusive, integrated centers of learning for students, faculty and the greater community, to prepare our next generation of leaders as ethical agents of change capable of transforming positively our communities and society.

There is growing political and societal pressure for universities to change and greater recognition by higher education leaders of the need for change. Reductions in resources, new educational technologies, unplanned events (such as pandemics), are putting ever greater pressure on leaders to transform the university culture. Employers of university graduates have signaled that successful professionals must possess essential soft skills and higher-order thinking skills along with technical and scientific knowledge (Crawford, P., Lang S. Fink, W., Dalton, R., & Fielitz, L., 2011). Although studies suggest that employers consider that university graduates have acquired many of these skills to their satisfaction (see Crawford and Lang, 2020), a greater focus on student-centered learning will enhance learning, and therefore the graduates' confidence as professionals. Therefore, universities need to realign their cultures and educational systems to become more student-centered and committed to creating ethical leaders for the 21st century with more relevant knowledge and skills.

In recognition of many of these factors, including the changing and broadening role of agriculture in society, it's greater interconnections with other natural and social sciences, globalization, changes in the nature of employment demands, the National Academies[4] created

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[4] The National Academies is a United States based, Non-profit organization made up of distinguished scholars engaged in scientific and engineering research and includes the National Academy of Science, the National Academy of Engineering and the Institute of Medicine. It is charged with "furthering knowledge and advising the Federal Government" (National Research Council, 2009, p. iii).

a committee in 2006 to analyze and study the nature of undergraduate education, and the need for its transformation. The results of the work of this committee are contained in a report entitled "Transforming Higher Education for a Changing World" (National Research Council, 2009). Specifically, "the committee was charged with investigating how institutions of higher education can improve the learning experience for students at the intersection of agriculture, environmental and life sciences, and related disciplines. It looked at innovations in teaching, learning, and the curriculum that could be used to prepare a workforce that would meet the needs of employers and the entire community" (National Research Council, 2009, p. xii). As part of this work, the Report recognizes key skill demands by employers beyond the technical, and scientific including business skills, ethical decision making and conflict resolution, higher-order thinking skills, communication, and personal relation skills among others. They also recognize the importance that universities incorporate recognized pedagogy that enhances student learning, in the classroom and beyond, such as the application of theory in an active learning environment (National Research Council, 2009). Based on literature review and pile-sort cluster analysis, Crawford, P., Lang S. Fink, W., Dalton, R., & Fielitz, L., 2011 identified seven major soft skills clusters as critical to employment; communication skills, decision-making problem solving, self-management, teamwork, professionalism, experiences and leadership skills. The ranked importance of these varied by group survey, but employers gave greater weight to the first four of these. Also, as part of their study they asked which learning environment was most effective, and for students, they found that guided learning environments to be the most effective including internships & co-curricular activities, experiential-active learning, (first and second by faculty, students, alum and employers), and classroom (3rd by faculty and employers, and 4th for students and alum), followed by extra-curricular activities (3rd by students and alum, and 4th by faculty and employers). In a more recent follow-up study, Crawford and Lane (2020) found that a skill preparedness gap (rated by respondents as "the difference between importance and preparedness" (p. 2), identified the skill "recognize and deal constructively with conflict" as the most important by alum and faculty and as the second most important by employers and students. (Crawford and Lane, 2020, p.3). These findings are important to the purpose of the Transforming Higher Education Project.

Overview of the Transforming Higher Education Project

The American University of Beirut (AUB) in partnership with the Global Confederation of Higher Education Associations for Agricultural and Life Sciences (GCHERA), EARTH University and the W.K. Kellogg Foundation launched this project to introduce key elements of success in university transformation, which have been modeled by EARTH University and other institutions, to universities in Mexico and Haiti, and across GCHERA's global university network over a period of three years between July 2018 and June 2021.

Five key elements of success as practiced at EARTH University and other universities around the world will be introduced and promoted among universities to strengthen learning processes among the select global institutions of higher learning. The project will directly support and collaborate with university transformation on the five elements of success among selected pilot universities in the Yucatan Peninsula of Mexico and Haiti, as well as promote university

transformation as a catalyst for change throughout the GCHERA network of member associations incorporating over 900 universities.

This Theory of Change Narrative conveys the specific expected outcomes that the project seeks as part of the university transformation process and it explains how it expects to influence "transformative change" among the pilot universities and across the network of GCHERA universities, according to the stated goal of the project.

EARTH University, an innovative, international agricultural university, established in Costa Rica in 1986 with support from the W.K. Kellogg Foundation, introduced from its inception many of these key elements as fundamental to its innovative, holistic, value-based educational system (see José A. Zaglul, 2016). The Transforming Higher Education project promotes five elements of success that have been identified as key to EARTH graduates' professional achievements. EARTH graduates are known for their proactive leadership in seeking new models of agriculture and rural development, focused on more sustainable agriculture systems and markets, social equity, and community development. Graduates have successfully created innovative, environmentally and socially responsible businesses and have assumed leadership positions in their communities and countries. Their graduates today originate from close to 40 countries in Latin America, Africa, North America, Europe, and Asia and most have returned to their countries and communities. The five essential elements of success practiced at EARTH as well as at many other innovative universities around the world include: experiential and practical based learning across the curriculum (Sherrard, D.,2020), systematic community engagement (Mazzola, J., 2020), social entrepreneurship integrated systematically within the agricultural curriculum (Alvarado, I., 2020), ethical and value-based leadership, (Perrera Diaz, I., 2020a) and dialogue and conflict resolution (Perrera Diaz, I., 2020b). "Dialogue and conflict resolution" was signaled as the 2nd most important skill with gaps between importance and capacity by graduates in a recent study by Crawford and Lang (2020). EARTH University defined the primary role of their faculty to be facilitators of student learning, through appropriate pedagogy and active, participatory student learning. As part of this role, the faculty successfully act as mentors and examples for the students to follow.

It is assumed that the goal of educating ethical leaders of agriculture for the 21st century is harmonious globally and universities from around the world and their graduates will benefit from transforming their universities in accordance with the key elements proposed by this project. The EARTH University experience demonstrates the importance and relevance of innovative transformation for the benefit of university graduates, communities, and society in general. Universities of Agriculture must introduce needed changes to ensure relevance and excellence far into the 21st century. Although there are many recognized obstacles to change, university networking, collaborating, and working together, globally, can improve the likelihood that successful transformation takes place (National Research Council, 2009). The project will promote global networking and collaboration through the GCHERA network of universities as a catalyst of change among GCHERA institutions of higher education.

The project is based on the assumption that the institutionalization of the five essential elements of success will be at the heart of the university transformation and this will enable the

university to graduate students with the leadership and essential soft skills, higher-order thinking skills, and technical capacities to become the leaders defined by the following Goal.

Goal (Ultimate Outcome)

The Theory of Change narrative begins by defining the Long-Term Goal or the ultimate outcome of the change process (Theory of Change Community, 2020).

The **Goal** of the Transforming Higher Education Project is to achieve:

Transformative change within selected and interested universities with colleges of agriculture enabling them to: **prepare university graduates as ethical leaders that serve society –who are creative and innovative problem solvers contributing to improving the well-being of their communities and countries by positively affecting the environment, promoting peace and understanding, and respecting diversity.**

It is assumed that universities upon achieving this goal will positively impact their communities, countries, and globally by their impacts on the **UN Sustainable Development Goals** via their graduates, and their research, outreach and educational programs. Some of the expected impacts for universities with study programs in agriculture include:

   i.   Improvements in environmental sustainability and sustainable agriculture.
   ii.   Climate change mitigation and adaptation
   iii.   Social, environmental and economic improvements to rural communities and countries.
   iv.   More ethical leadership, value-based decision making, and reduced corruption
   v.   Greater income equality and sustainable businesses
   vi.   More robust economic systems
   vii.   A society of peace, prosperity and dignity for all.

University Transformation

Given that the goal is to achieve "transformative change" of the university system, it is essential that we define what the project means by "university transformation". This definition will be very relevant in defining the preconditions of success or outcomes along the pathways to change within the university.

Eckel, Green, and Hill (2001) in their study of 28 universities embarking on transformative change define change within the university as being on a scale that ranges from adjustments on one end to transformation on the other. They describe adjustments as "a change or a series of changes that are modifications to an existing practice" (p.6). University transformation is visualized as change which "(1) alters the culture of the institution by changing underlying assumptions and overt institutional behaviors, processes, and structures; (2) is deep and pervasive, affecting the whole institution; (3) is intentional; and (4) occurs over time" (Eckel, Green, and Hill, 2001, p.5). Therefore, university transformation involves change that is not only deep but is also pervasive across the university. As they explain: "Deep change implies a shift in values and assumptions that underlie the usual way of doing business. Deep change requires

people to think differently as well as to act differently" (Eckel, Green, and Hill, 2001, p. 5). Profound or 'deep' change may be limited to just one program, department, or unit. To be truly transformative, even if it begins in one unit, department, or program, it eventually must spread across the university to create 'pervasive' change. Between "adjustments" and "transformation" you can include changes that are deep (focus on student-centered learning within a class or department), but not pervasive and changes that are pervasive but not profound (changing the university-wide student records system).

The changes taking place in a transforming university are dynamic, interconnected, reinforcing and synergistic affecting the way people think and act. As Eckel, Green and Hill (2001) explain: "transformation touches the core of the institution. Transformational change also is pervasive; it is a collective, institution wide movement, even though it can happen one unit (or even one person) at a time. When enough people act differently or think in a new way, that new way becomes the norm. The institution becomes transformed because it has adopted a new institutional culture." (p.6).

The issue of time is also critical to understanding change and transformative change within the university culture. The dynamic, interconnected, reinforcing and synergistic change process at the university can be considered evolutionary. Planned changes often times lead to further reinforcing and enabling changes. In their study, Eckel, Green and Hill (2001) classified universities as "transforming" even when the change process continued beyond the original five years of the study. They did not find that any university had reached "transformation" during that period. Therefore, it is difficult to consider a university as having reached transformation even over a five-year period. This is relevant to the potential of the project to achieve the goal of the project as it is programmed for three years.

This definition of "transformative change" is important to understanding the intermediate-term outcomes and how to measure progress along the change pathways for the project.

Outcomes (Preconditions of Success)

The outcomes are presented below for the Long-, Intermediate-, and the Short-term. The change pathway, outcomes, and intervention strategies are presented in the two accompanying conceptual maps (see Appendices A and B). The first conceptual map is specific to the pilot universities and can be applied to any university undertaking transformative change (Appendix A). The second conceptual map is more broadly focused on promoting university change through the GCHERA Associations and the member universities, or for that matter, other universities interested in change (Appendix B). The project strategies and specific interventions differ for the two groups. The narrative explains in more detail the components and assumptions behind what is presented in the two conceptual maps.

Although the Long-term Goal and Outcomes are similar in both cases, the pathway to achieve that from the perspective of the project differs. This is clearly laid out in each of the two

conceptual maps. The narrative attempts to clarify when there are differences, but for the most part, focuses on facilitating 'transformative change' at the university level, which is shown in the Pilot University Conceptual Map and is considered embedded in the change pathway for the GCHERA institutions, where the Member Associations are intermediaries.

Long-Term Outcomes

The expectation is that in the long term the characteristics of the university and the characteristics of its graduates will have undergone a "transformative change" in accordance to the specified Goal. The realization of the Long-Term Outcome is beyond the scope of the Transforming Higher Education Project because institutional transformation is a process that requires more time than the three-year life of this project. There will also be many other factors and forces which influence the achievement of this outcome in the long term and many other actors who may contribute. However, it is assumed that the university will be well on its way to achieving the transformative change that it defines for itself by the time the project comes to an end, and will continue on its path to achieving its goal. In the conceptual maps, the Long term is separated from the Intermediate term by a hatched line to indicate that the Long term is beyond the scope of the project.

The Long-Term Outcome will be a reflection of the Transformed University and its graduates.

i. **Graduates**
    University graduates will be recognized for their proactive problem solving capacity and spirit, values and ethical leadership and decision making, technical capacity, commitment to addressing social and economic change, environmental consciousness, innovative initiatives for sustainability, social entrepreneurship, community and citizen engagement in service to their country and communities, as well as their world view. They will have achieved higher order thinking skills (analysis, synthesis, and problem solving skills) and essential soft skills, such as teamwork, personal relationships, leadership, emotional and cultural intelligence, creativity, and communication skills. They will have greater confidence to contribute to solving the problems of the 21st century.

ii. **Transformed University**
    The University will be recognized for the quality and impact of its graduates. It will be known for its: educational system focused on student learning, experiential and practical based learning methodologies, community engagement, and its problem-solving research and innovations contributing to economic growth, environmental sustainability, sustainable development and human well-being in its communities and country. High graduation rates and the success of graduates in attaining employment, and creating innovative enterprises with strong social and environmental values are also expected characteristics of the transformed university.

Intermediate-Term Outcomes

For the Theory of Change, the Intermediate Outcomes are expected to be achieved during the life of the Project. Given that the Transforming Higher Education Project has a three-year life it is expected that, in the case of the pilot universities, the major changes will be introduced into the university system, but that full university transformation will not be achieved over the life of the project. It is considered, however, that by the end of the project, the universities will be "transforming" or in other words, they will be in the process of "transformative change" which will continue because of momentum and an institutional commitment to change on behalf of university leadership. The successful changes that will be introduced by the project will create buy-in by the faculty and the students, and they, along with the leadership, will be the driving force for continuous transformation beyond the life of the project.

In the case of the GCHERA Associations and member universities, we cannot assume that the project will be able to achieve "transformative change" at the university level over the scope of this project. The project will promote and support relevant new and on-going change initiatives through the GCHERA Member Associations, and in some instances at the university level. It will concentrate its efforts on acting as a catalyst for change among the GCHERA Member Associations and will support their efforts to create transformative change among their member universities. For this reason, the Intermediate-term for the GCHERA Conceptual map will not have the same reach along the change pathway as for the Pilot Universities (See Appendix B).

The Intermediate Outcomes are those changes necessary for the university system to achieve the Long-term Outcomes and Goal. In Theory of Change, by definition, the outcomes or preconditions over the intermediate-term are sequential, moving from one to the next. However, the university change process is an evolutionary, dynamic interaction between various components, and the related preconditions or outcomes will not necessarily be achieved sequentially. Initial changes will set off a dynamic process of observation and debate among faculty, students, and university leadership, with growing interest and demand for more change. For the change process to be transformational requires changes in systems, processes, culture, policy, attitudes, and curriculum. These will not likely take place in a sequential fashion given the culture and complexity of university systems, but rather may actually happen at differing points of the process depending on internal and external demands and pressures, internal decision making, the institutional environment, and available resources, among other things.

The change process within a given university will depend on the culture and leadership of that university to find their own, appropriate path. The process will be led and oriented by university leadership, the university's Strategic Change Agenda or vision of change (a short-term outcome), and a steering committee with representation from across the university. It will be a dynamic process leading to greater changes which will eventually become more disperse and profound as the changes multiply and build on themselves. University stakeholders, both

external as well as internal, will need to be consulted or included in the process to ensure the sustainability of the envisioned changes.

We can define two types of expected outcomes; the principal changes that are being introduced into the system which are necessary to reach the long-term outcomes and goal, and the secondary, or complementary changes which are necessary to support and reinforce the outcomes being sought. Given that the change process is non-sequential over the intermediate-term, the major expected outcomes are presented in Figure 1 for the Pilot University Conceptual Map as a large inner circle (The full Pilot University Conceptual Map is presented in Appendix A). The large inner circle is surrounded by smaller inter-connected circles denoting complementary changes that facilitate and reinforce the achievement of the principal expected outcomes. The timing, specifics, and depth of changes that will take place are expected to vary by the institution as part of the dynamic process of change. The arrows represent the interconnections between the supporting changes necessary to reinforce the principal expected outcomes.
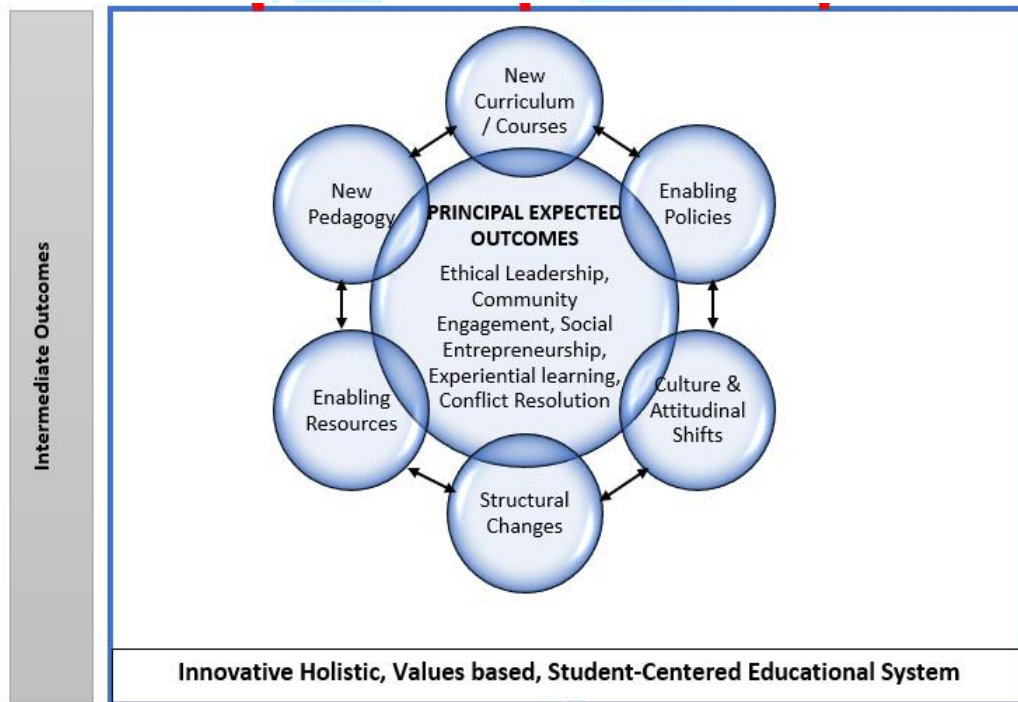
Figure 1: Preconditions or Expected Outcomes over the Intermediate-Term (taken from Pilot University Conceptual Map, Appendix A)

The Transforming Higher Education project expects the pilot universities will successfully establish a holistic student-centered, value-based educational system & culture with the institutionalization of the following key elements of success (presented in the large inner circle in the Pilot University Conceptual Map):

- Experiential/participatory learning pedagogy (a learn by doing active engagement approach);

- University engagement within communities leading to authentic community development outcomes and opportunities;
- Integration of entrepreneurial education and business development training focusing on economic, environmental and social impact as part of the technical study program;
- Ethical and value-based leadership urgently needed for peace, inclusiveness, sustainable development, harmony and opportunities; values including integrity, honesty, respect, environmental sustainability, gender, and racial equality, as well as ethnic inclusion (including indigenous populations); and
- Systemic education of decision making based on problem-solving, conflict resolution through dialogue. and the integration of environmental consciousness, creativity, and innovation.

The successful establishment of these principal changes is key to achieving long-term outcomes and goals. The achievement of any one of these major changes would represent a profound and pervasive change in the university culture. The introduction of three or more of these changes would represent a very thorough transformation of the university. The project expects that each pilot university will introduce at least three of these major changes to fully transform their educational systems.

Critical to the success of achieving these principal expected outcomes is the introduction of supporting changes in several interrelated factors represented by the outer ring of circles in the Pilot University Conceptual Map. These include changes in policy, structure, resources, curriculum and courses, pedagogy, attitudes, and culture. The arrows connecting each of the supporting changes included in the outer ring of circles in Figure 1 represent the dynamic interactions between these factors which support and reinforce the planned changes to the educational model of the center circle. The supporting changes may be introduced at different times, or simultaneously, before, during, or after the introduction of the principal changes to the university system.

Each of these supporting expected outcomes is expanded on here:

i. **Curriculum & new courses**
    New and innovative courses are introduced and older courses modified to reflect the new skills to be acquired according to the **principal outcomes**. Curriculum enhancements would result from a curriculum review that should involve principal stakeholders, including students, faculty, and community members such as farmers, community leaders, business persons, and other community leaders. It is expected that Curriculum enhancement would potentially include the following as examples:
    - Courses on written and oral communication skills including how to communicate with community members.
    - Value and ethical leadership courses and its systematic integration across the curriculum

- More systemic courses or programs that integrate entrepreneurship, community engagement, value and ethics, and conflict resolution into appropriate areas of the existing curriculum and extra-curricular activities as part of the hidden or implicit curriculum[5].
- The integration of critical areas with other appropriate courses. For example:
    - Ethics should be incorporated into entrepreneurial courses, science courses, technical courses, as well as in community engagement activities.
    - The idea that "learning for understanding" of STEM subject matter (science, technology, engineering, and mathematics) is enhanced when these courses incorporate the "major concepts and principles" of the discipline the students are studying (National Research Council, 2009, p. 36). Therefore, if students are studying agriculture, relating scientific or mathematical principles to agricultural concepts will facilitate student learning of science or math. It is recommended that STEM courses integrate practical applications of the primary disciplines offered.
- Entrepreneurial education integrated with agricultural production courses, marketing, and food technology.
- Communications techniques integrated across the curriculum to ensure using professional communication learned in communications courses.

ii. **Supportive institutional & academic policies**

Institutional and academic policies will be introduced or modified to stimulate and drive the change process. For the desired principal changes to be implemented and achieved successfully, university policies must align with and support the planned changes. Policy outcomes would include:

- Faculty promotion and tenure policies which support and enhance faculty commitment to:
    - Student-centered learning
    - Experiential/ participatory learning pedagogy
    - Active participatory learning in the classroom
    - Community engagement
    - Faculty collaboration and thematic integration across curriculum and courses.
- Administrative support for greater:
    - Field-based learning.
    - Community engagement.

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[5] The Hidden or Implicit curriculum refers to other experiences, activities, programs that students participate in, or observe and which influences their learning and growth. The university culture that students live, study, and work in influences their learning. This can also include faculty and support staff as mentors or examples, ethical leadership demonstrated by administrators, faculty, and others, as well as the university culture. If the university stresses service to students and community, total quality improvement, and other positive processes, students will observe and experience these which influence their thinking and actions.

- o Entrepreneurial based learning projects.
- o Off-campus learning
- Financial and budget support of principal outcomes
- Academic policy support for changes in:
  - o Evaluation methods of non-traditional learning in ethics, conflict resolution, participatory learning, service learning, among others.
  - o Increased time dedicated to practical learning activities
  - o Increased application of experiential and practical based learning activities.
  - o Increased student opportunities to participate in outside class academic activities such as Student Research, Internships, Study Abroad, Community based service learning, among others.

iii.   **Attitudinal and capacity changes of faculty**

The faculty will need to learn new teaching strategies, and change their attitudes about teaching, learning, and their role within the process. It is expected that as the university shifts to become more focused on student learning, experiential learning, and community engagement, the faculty will need to go through a paradigm shift in terms of their role as teachers within the university community. Specifically, it is expected that their role will shift from that of purveyors of knowledge to becoming facilitators of learning by creating, orienting, and directing the learning environment to allow students to become proactive learners. We, therefore, expect to see some of the following outcomes:

- Shift in attitude and focus on student learning. It is expected that the faculty will change their attitudes and actions with respect to students in this new role. This paradigm shift by the faculty will be key to creating a holistic, integrated student-centered learning culture.
- Enhanced pedagogical capacity corresponding to experiential learning, community outreach, and their role as facilitators of learning. There are a variety of known pedagogical methods that will help faculty improve learning (National Research Council, 2009; Michael, J, 2020, Northern Illinois University Center for Innovative Teaching and Learning. (2012)).

iv.   **Attitudinal changes of students** as self-directed, proactive learners.

The present passive educational system with faculty as purveyors of knowledge creates a passive learning environment for students. The introduction of student-centered learning, experiential education, and community engagement changes the expectation for students. Students will be required to take greater responsibility for their learning, under the guidance and direction of the professor. Many students may resist and feel uncomfortable with this expectation at first as most are products of traditional, passive learning, educational systems from primary up through secondary education. As students gain greater experience and adjust to this new learning environment, they will grow and take more advantage of the opportunities for learning and professional development. They will transition from passive learners to become self-directed, proactive learners, taking more

and more responsibility for their learning, voluntarily increasing their time on experiential, participative learning activities, for the joy of learning. This together with the Attitudinal change of the faculty will create a deep cultural shift in the university. The expected outcomes include:

- Increased awareness and capacity of students to take responsibility for their learning. It is expected that students will be prepared for their new responsibilities upon entering the university and faculty will clarify their expectations in this regard.
- Increased capacity for self-directed learning.
- Increased capacity to be proactive learners.

v. **Resources and infrastructure** (classrooms, labs, field site) supporting the new model.

It is expected that there will need to be a reallocation or new resources required for the investment in new and modified infrastructure, facilities, vehicles, new faculty and faculty rewards necessary for the achievement of the outcomes of experiential education, community engagement and entrepreneurial learning The expected outcomes may potentially include:

- Increased resources to support these initiatives from a shift in existing institutional budgets.
- Increased financing of specific initiatives from discretionary funds.
- Increased resources from projects or other external sources or from additional funds for specific initiatives.

However, significant changes can be made within the educational system even with limited resources which demonstrates a commitment on behalf of the university administration and motivates faculty and academic leaders to make continuous improvements leading to more transformative change.

vi. **Structural changes**.

New decision making structures will be introduced to support the change agenda. Expected potential outcomes include:

- Campus or area-wide steering committee to orient and manage the implementation of the change agenda.
- Leaders and steering committees created and named to guide each the introduction of each of the principal outcome components. These are referred to as projects or objectives in the Strategic Change Agendas (explained in the following section).
- Creation of complementary support centers such as a "Teaching and Learning Center" to support faculty development to enhance the experiential, active pedagogy.
- Creation or enhancement of community engagement centers.

vii. **New Pedagogy**. The pedagogy and institutional culture of the university provides the foundation for the educational system. To achieve the expected principal outcomes requires the successful introduction and practice of pedagogy focused on students

becoming responsible for their own learning, driving their growth as proactive, self-directed learners. The project expects that the faculty will introduce experiential and practicum based learning methods in their classes and across the curriculum to enhance learning, confidence building, and the acquisition of higher-order learning skills, required to become ethical leaders with the capacity to contribute to the solution of the problems of the 21st century. Professionals with the skills, attitudes, and confidence to immediately and actively contribute upon graduation, with the theoretical knowledge to inform practice, the practical skills and experience in management to make decisions and lead and to have the self-confidence developed through actual experience and accomplishment of shared goals. Therefore, we expect to see some of the following potential outcomes from the application of new pedagogy:

- New innovations in experiential, practical based learning methods introduced inside and outside the classroom.
- Increased use of student participation techniques applied in the classroom.
- New innovations in courses introduced outside the classroom such as student-faculty research, service learning, increased fieldwork, increased engagement with the community, internships.
- Increased applications of collaborative based projects.
- Increased joint student collaboration over a multitude of courses.

Short-Term Outcomes

Before the introduction of "transformative changes" in the university system, it is expected that the universities must achieve a series of three short-term outcomes. They are presented sequentially in Table 2 below (taken from the two Conceptual Maps found in Appendix A and B) and include university leadership and their stakeholders achieving awareness of the need to change the university, their commitment to change, and creating a vision for change. Although the first two outcomes may take place simultaneously or sequentially, the process of envisioning the change process would only take place after the first two outcomes have been achieved which can be seen as a transitioning point between the short and intermediate terms.

Short-Term Outcomes	VISION FOR CHANGE
	COMMITMENT TO CHANGE
	AWARENESS OF NEED FOR CHANGE
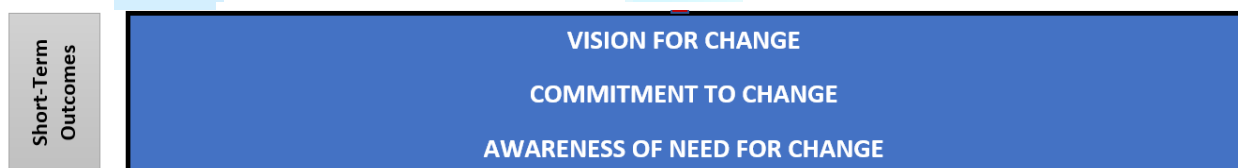
Figure 2: Short-term preconditions for university transformation

Vision for Change

Before the University initiates a transformation process it must develop a vision for change to define the Goal and Outcomes specific to each university. The vision will vary according to the university leadership, external influences, and culture of each university. The envisioning process should include both external and internal stakeholders and leads to the declaration of a Strategic Change Agenda.

Therefore, the expected output will be a documented Strategic Change Agenda which is accompanied by an Action Plan which defines the actions that need to be implemented necessary to achieve the planned changes. The Strategic Change Agenda translates the Vision of Change that the University imagines for itself into a document that provides concrete direction for the change process. It includes the Long-Term Goal that the University wishes to achieve, and the primary strategic changes or principal outcomes that the University expects to achieve in the Intermediate-Term, along with the supporting changes that drive the change process. Within the context of the Transforming Higher Education project, the principal strategic changes or outcomes for the Pilot Universities will coincide with the five elements of success as defined in the project. It is expected that each of the Pilot Universities will commit to introducing at least three of the five key elements of success over the life of the project.

The Action Plan defined at this stage includes the actions necessary to bring about the envisioned changes required to achieve university transformation. However, the initial Action Plan must be adjusted periodically in response to the evolution of change, as the dynamic change process evolves through observation, learning, and the shifting reality and culture that plays on the process.

There are two other expected outcomes in the Short Term which are critical to a university deciding to embark on the transformation of a faculty, school, or the entire university. These may take place sequentially or simultaneously but are presented in two steps here.

Commitment to Change/ Transformation

The expected outcome at this stage is a commitment by the University leadership to engaging in the process of transformative change. Although individual administrators, unit leaders, and faculty may introduce specific changes or adjustments to courses, units, or programs, at any time, before a university initiates a process of transformation requires a commitment by university leadership. For this to happen, university leaders may consult with university stakeholders such as the Boards of Trustees or Directors, public sector heads, academic leaders, faculty, and students to ensure that there is institutional support for this process.

It is expected that as an outcome University Leadership will announce in writing and/or verbally a commitment to the change process in some meaningful way. In the case of the project, the Pilot Universities have committed to change by signing agreements with the American University of Beirut (AUB) and announcing the transformation process among the faculty. AUB´s President committed to undertaking the Change process at AUB by announcing this to the AUB Board of Trustees.

Many individual faculty members, leaders and innovators at the Faculty, School or College level may become committed to implementing changes by introducing new programs or courses or adopting many of the elements of change such as experiential learning or increased community engagement in their classrooms. These are positive steps and demonstrate the benefits to

change within the university, but do not necessarily lead to university transformation. However, they are important first steps and should be recognized. Many of these cases will be identified among the GCHERA Association Member Universities as cases to share across the network and the pilot universities. These innovative individuals can become focal points and vocal advocates for change, acting as a catalyst to a greater change initiative once the university leadership becomes committed to university transformation.

It is expected that the university leadership commitment to university transformation will be followed by a structural shift (outcome) through the creation of a campus-wide steering committee (commission, working group) charged with directing, orienting and leading the transformation process, across the university with the inclusion of a project facilitator. In the case of AUB, they named a campus-wide task force led by the Dean of the Faculty of Agriculture and Food Sciences. The Pilot Universities have named Technical Orientation Committees led by the university director (2 cases), Dean or its equivalent (2 cases). This is a sign of commitment and will be a driving force of the transformation process. These are important structural changes that demonstrate commitment by university leadership.

Awareness of the Need for Change

The first critical outcome before university leaders will commit to initiating a change process is an increased awareness of the need for changing the university. University leadership must become convinced that there is a reason to and benefits from introducing "transformative changes" in the university. That there are a critical need and associated benefits to introducing changes in pedagogy, curriculum, courses, policies, attitudes. This outcome should be demonstrated in vocal and/or written declarations across the university.

Convincing university leadership of the need for change is essential, but is not necessarily sufficient, for the university to commit to change. It will also be necessary to convince deans, faculty, and other stakeholders, through open and scholarly debate. Often times, it may be the faculty and/or students driving the debate on the need for and benefits to change. The EARTH University successful experiences and lessons as an innovative student-centered learning institution demonstrate the potential benefits from incorporating these essential areas of success for any university evaluating the possibility of committing to a transformation process. Sharing the EARTH University experience, as well as other innovative experiences, will be a major instrument for building awareness. This is a primary justification for this project.

Even though many university leaders may have already passed this stage, it will be critical for the project's success to build greater awareness of the need for change among other stakeholders within the pilot universities as well as across the GCHERA university associations. This will be accomplished by sharing studies and cases that identify and demonstrate the need for change and by openly and extensively engaging university leaders, practitioners, educational researchers, faculty, and students in discussions and debates on the issues. The project must identify and involve vocal advocates for change and also seek to address potential

barriers to change.[6] University leaders, faculty, and students will be the driving force to change within the universities and they must become convinced that not only is change necessary but that it is essential to the future and relevance of university education. They may not commit to change at this stage as they perceive that the obstacles are too great, or they know that they have to promote change within the university before they can commit the university to a change process, which leads to the next predetermined condition, commitment to change.

Strategies or Interventions for Producing Change

The Theory of Change as presented here can be applied to any university that is interested in engaging in transformative change. The Transforming Higher Education project's strategy is a two-pronged approach to facilitate university transformation. The first prong enables and supports university transformation around the five essential elements of success at four pilot universities at the national/country level in Haiti and Mexico. The objective is for these universities to achieve transformative change, to learn from their experiences, and to share them throughout the GCHERA network of member universities. The project expects that each pilot university will institutionalize the change process over the lifetime of the project, ensuring that they have become "transforming institutions".

The second prong advocates for university transformation globally by promoting and facilitating university change across countries and regions via the GCHERA network of University Associations.[7]   GCHERA encompasses 16 regional associations with over 900 universities belong to the Associations. The project expects to advocate for "transformative change" across the GCHERA network, to support their respective change initiatives and interests, and to learn from and share their experiences across the network and with the pilot universities. Given the global reach and the diversity of the organizations involved in the GCHERA network means that the expected project impact will be limited to building awareness and catalyzing change processes, discussion, and debate across the network. Therefore, change advocacy will include a efforts to obtain additional project financing to support Association and individual university change initiatives throughout the network.

Because of diverse expectations on behalf of the two target groups, we include a conceptual map for each. The intervention strategies that will be applied differ according to the target group because of the nature of the two groups and the project resources that are available to drive change within each of the two.

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[6] The potential barriers to change, depending on the size and scope of the university, may be very great. They can include research inertia, tradition, accreditation systems, research biased ranking systems, promotion and tenure systems weighted on research, lack of resources, faculty resistance, bias towards the traditional role of the faculty as purveyors of knowledge, among many others. Making a decision to commit to a change process requires first evaluating the barriers and creating a strategy for overcoming these obstacles. This might be considered as another separate outcome of the change process. However, it can also be considered as part of the deliberation process, before a commitment is made. Overcoming these obstacles should not be dismissed as a necessary part of the change process and strategy of the university in its path to transformation.

[7] The American University of Beirut as the lead partner institution of the "Transforming Higher Education Project" has committed to university transformation as part of its leadership to the project. Their case is similar to any GCHERA Association member university that might embark on a transformation process through their association with the project.

Pilot Universities

Four Pilot Universities have been selected, three from the Yucatan Peninsula, Mexico, and one from Haiti[8]. The universities were selected because of an expressed awareness and understanding of the need for change in line with the goals and objectives of the project. They agreed to commit to the transformation process within their Schools or Colleges of Agriculture, at the minimum. Therefore, they were selected because they had already reached the first two stages of the transformation process. Also, interest has already been generated by other parts of the university to become part of the transformation process as students and professors from other departments see and feel a positive paradigm shift. Also, in the case of Haiti, the Quisqueya University President expressed interest from the beginning that the transformation process is carried out university-wide.

These universities are labeled as pilot universities because the transformation process will be a learning experience for them and the project, and their experiences and results will be shared among themselves and throughout the GCHERA network of universities and beyond to other interested academicians, students, and university leaders. Everyone will learn from the pilot university experiences.

Innovative university models and changes in line with the goal of the Transforming Higher Education project identified among the GCHERA Association Member Universities will be shared with the Pilot Universities as well as throughout the GCHERA network of universities.

There are three basic strategic thrusts that the project will apply to promote and support the pilot university in its transformative change processes. In the case of the pilot universities, they are applied as described here.

1. **Change Management, Coaching, and Resources.**

   The project supports the university transformation processes by providing resources for a dedicated team of professionals to coordinate and guide the transformation process within the university (this applies only to the Pilot Universities). The project director coordinates with and supports this team and provides orientation, coaching, and monitoring support to the university leaders charged with the transformation process providing continuous feedback and guidance. Institutional support for Change Management will also be provided to the leadership teams targeted to specific changes required during the process. There is a close and constant rapport between the university leaders, facilitators, and the project team, via email, WhatsApp, and virtual conferences. The project director will pay at least two visits a year to each pilot university, and more if warranted. The project director and other project support are available continuously to guide and support the university leaders to manage the change process at their institutions.

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[8] The four Pilot Universities are: The Instituto Tecnológico Superior de Calkiní, the Instituto Tecnológico de Conkal, the Instituto Tecnológico Superior de Hopelchén, México and the Université de Quisqueya, Haiti.

2. **Capacity Development**

The project provides the pilot universities with training on critical areas including Strategic Change Agendas and Action Plan development and implementation, and on the five key elements of success. Training is provided by project staff and Subject Matter Experts (SMEs) in areas defined within the Change Agendas and Action Plans in support of the Strategic Change Agendas. The Subject Matter Experts are innovative leaders in critical areas identified from EARTH University and GCHERA Association Member Universities. Specific training courses and workshops will be prepared according to identified needs to facilitate the implementation of change according to each university's strategic change agenda.

The project also facilitates on-site training for faculty at innovative universities in areas that further the pilot university change agendas.

3. **Knowledge and Information Sharing**

The Project produced and makes available documents and other information on the five elements of success and their associated methodologies on the project and GCHERA websites. They provide access to publications on aspects of university transformation, change processes and experiences, and innovations found around the world.

Innovative university educational models, courses, programs, and experiences from GCHERA Association Member Universities will be shared with the Pilot Universities as well as throughout the Transformation Network.

Networks of practitioners of the five elements of success, will be created for the purpose of sharing pilot university experiences and the GCHERA experiences among members as a means of multiplying the impact of the project using strategic social media tools. Discussion, debate, experience sharing, questions, and innovations will be widely shared by invited members to the group to broaden and enhance the project objectives and goals.

Global webinars will be held on relevant and critical topics of interest to the networks and the transformation processes. These webinars will seek to share innovative experiences among the Pilot Universities and GCHERA Association Universities. Key university personnel leading the change processes in each of the pilot universities will participate in global conferences, project workshops, and campus workshops to share their experiences and to learn from others.

Global Confederation of University Associations for Agriculture and Life Sciences (GCHERA)

GCHERA is included in this project as a key partner of the Project and as a target of the Project's efforts. The project will work with the GCHERA Member Associations, and

potentially with specific universities in a dual and limited way, as partners and as beneficiary targets of the project. The GCHERA Conceptual Map lays out the pathway for change among the GCHERA Association Member Universities. The pathway map includes outcomes for the GCHERA Member Associations and the Member Universities. It is similar in scope to the Pilot University Conceptual Map, but differs in presentation, as the pathway includes the GCHERA Member Associations as intermediaries to their Member Universities.

The project will work collaboratively with the GCHERA organization and its Member Associations to promote change among its members, and on a more limited scale directly with specific universities that are implementing change or are interested in doing so. The capacity of GCHERA will be strengthened to advocate for change, strengthen its networking capacity, and organize sharing initiatives across its network. A key strategy will be to advocate for change among the Associations as Intermediaries to their member universities, supporting their efforts to reach out to their member universities, while at the same time partnering with those that are introducing or have achieved innovative changes, to reach out to others throughout the network.

A few GCHERA Association Member Universities have innovative educational models including many of the concepts promoted in this project, while others have introduced innovative changes in their educational systems to address many of the challenges and objectives that this project seeks to address. Those universities that are introducing innovative changes can benefit from the project and offer valuable ideas, innovations, and experiences to others thinking of engaging in university change. In some cases, these efforts may be considered adjustments or they may be initial steps to more transformative change. Regardless, the project expects to learn from their experiences while at the same time, promote and support them on implementing more transformative changes within their university systems.

The innovative models and initiatives identified at GCHERA Association Member Universities are best practices to be shared with the pilot universities, and throughout the GCHERA network and beyond.

GCHERA includes the need for university change within its present strategic focus. However, this is not necessarily the case for each of its Member Associations. Although some associations have previously recognized the need for university change (The Association of Public and Land-grant Universities supported the work of the National Science Council, 2009) and others are beginning to discuss and debate the issue, most have not given it the attention it deserves. Many of the GCHERA Association Member Universities, are very traditional in their focus and have not recognized the need for transformation or if they have, they have not committed to a transformation process as they are overcome by tradition, and strong obstacles to change.

For this reason and also due to the limited resources available for this target group, the number of universities encompassed by GCHERA, and the limited time available, the project will focus its efforts on raising awareness of the need for change, advocating for change and commitment to change among GCHERA Association Members. It will also promote and

support those innovative GCHERA Association Member Universities on engaging in transformative change Finally, the project will encourage and assist GCHERA Member Association and university efforts to acquire other resources to support university transformation processes among those committed institutions. The project has initiated discussions with several of the associations and there is consensus on the need for change and interest in promoting this further among their university members.

The Intervention Strategies for catalyzing change in the GCHERA Association member universities will apply the following three general strategies, emphasizing diverse actions as explained below.

1. **Institutional Strengthening and Change Advocacy**

The project supports the GCHERA organization management structure to strengthen the organization and its strategic efforts focused on the educational remit of its university members in educating leaders to address the global challenges of the 21st century. A strengthened GCHERA focused on the need for university transformation will catalyze changes among its Member Associations and their university members.

The project will provide GCHERA with financial and management support for advocacy of university transformation among the GCHERA Member Associations, and their associated universities. Guidance, change management mentoring, materials and tools, and capacity development will be provided to universities and leaders that are promoting or leading change within their organization.

2. **Networking and Knowledge Sharing**

The building of knowledge-sharing networks among the leaders and practitioners of the university transformation and the five key elements of success is a major strategy that the project and GCHERA will apply to promote and support change among the GCHERA Member Associations and their Member Universities.

The project will support yearly conferences of GCHERA Association members and its leadership on topics related to creating awareness of the need for university transformation as well as to create commitment for change.

Regional Association Conferences will be supported with project input on topics and presenters related to the five key elements of success, promotion of the need for change, and on the project's experiences and topics relevant to the Transformation Process.

GCHERA Association members will be supported to participate in project events to learn from the project, and the pilot university experiences as well as to share their own experiences. Knowledgeable practitioners and experts from throughout the GCHERA network will be organizers and panelists on webinars and knowledge-sharing networks to widely share their knowledge and experiences on relevant topics to university transformation.

3. **Resource mobilization**

The project, together with its partners, will seek other resources to build on the momentum generated by the Change Advocacy and Knowledge Sharing strategy. Given the time framework of the project and the extensive network of GCHERA institutions, additional resources will be required to build on "transformative change" initiatives generated by the project among the GCHERA Association Members, according to needs, interests, and potential for change. For instance, in the case of the GCHERA member RUFORUM, there is growing interest among 11 university leaders to initiate university change generated by the GCHERA President's change advocacy and the EARTH University experiences in a RUFORUM regional conference at the end of 2019. Potential support for the change initiative is being explored with resource partners with a high presence in Africa.

Other Interventions not directed by the project

Resources Mobilization

Pilot Universities

The pilot universities will have to invest considerable amounts of their own resources to the implementation of their change processes in each of their universities to be successful. To implement the change agendas resources will be required for new faculty, new infrastructure, equipment, vehicles, and potentially to reward faculty and staff. The time investment of university leaders and faculty members as part of the planning, implementation, learning, and sharing will be considerable. Without this dedication of resources, the universities will not be successful in transforming their institutions or reaching the goal set out in the project and in their strategic change agendas in the long-term. Some financial resources may be reprioritized within the university and directed toward achieving their strategic change agendas. Outside resources may be necessary to achieve greater institutionalization of the changes.

GCHERA Association Universities

To promote and support University Transformation within the GCHERA Associations and the University Members of the different associations will require additional resources beyond the scope of this project. Even though these universities will dedicate their own resources to their defined change agendas, additional supportive resources including expertise, are beneficial to provide impetus and sustainability to any change effort and especially a transformative change process. Many of the GCHERA Member Associations have demonstrated interest and particularly the Mexican, African and Asian Associations are introducing this topic to their Associations. The American Public and Land-grant University Association (APLU) is participating in a project financed by the Bill & Melinda Gates Foundation promoting student-centered University Transformation (https://www.aplu.org/news-and-media/News/aplu-awarded-two-year-grant-to--spur-student-centered-university-transformation, 2020).

Assumptions

Assumptions are necessary for the formulation of a Theory of Change. Assumptions can be of three types according to Taplin et. al. (2020, p.19):

1. "The causal pathway of preconditions and activities leading to a long-term outcome expresses a set of assumptions about what to change and how change can take place."
2. "The specific relationships drawn between outcomes in a framework rest on assumptions. ActKnowledge terms these as "rationales" to distinguish them from more general assumptions. Rationales explain why one outcome is a precondition to another. Rationales can also explain the specific choice and placement of activities within an outcomes pathway. Assumptions of this type are implicit in the diagram but are best made explicit through articulation."
3. "Assumptions may be made about the context or environment within which the initiative will operate. If such assumptions involve things necessary to the theory and not yet attained, they are naturally treated as outcomes. If they are thought to be in place already and likely to be sustained, they should be noted but not put on the pathway as outcomes."

The first two of these are assumptions related to the formulation of the theory of how change will take place. Many of these are included in the explanations of the Intermediate expected outcomes and the interrelationships between the different change factors that are relevant to the transformation.

The third type of assumption is also referred to in The Theory of Change Community Glossary (2020) as the "Conditions or resources that your group believes are needed for the success of your program, and that you believe already exist and will not be problematic. An assumption like a precondition is a condition that is necessary for your program's success. Unlike a precondition, it already is in place and does not need to be brought about. When your group states your assumptions, it is a good time to take into account the various conditions that your program's success will rely on. Assumptions are crucial because if they are incorrect it can completely alter how your program works." (The Theory of Change Community Glossary, 2020).

There are a series of assumptions that this project makes that are critical to the University Transformation as laid out in this narrative. If these conditions do not exist as assumed, the project will not have the impact that is proposed. The more critical assumptions of each of the three types are presented below.

Type 1 Assumptions (applies to all university change)

The following Type 1 Assumptions apply to all colleges and universities.

1. The transformation of the university around the five essential elements of success will lead to the Expected Outcomes and Goal.

2. Experiential and practical based learning that puts theory into practice improves higher-order learning and soft skills acquisition (self-learning, critical thinking, responsibility, leadership, skills, among others), increases student retention, increases motivation among students and faculty, and improves students' professional performance and self-confidence.
3. Faculty will support the change process by being involved in the decision making, creating discussion and scholarly debate on the changes, and by receiving training in new areas critical to success.
4. Community engagement by the university will enhance student learning creating opportunities to put theory into practice and permit students to participate in the solution of real-world problems. The university will gain prestige and recognition for its contributions to solving community-based problems.

Type 2 Assumptions

Type 2 Assumptions that apply to all university change

The following Type 2 Assumptions apply to all university change and are relevant to the change processes in the case of the Pilot Universities and the GCHERA institutions, once change begins.

1. Changes in curriculum, institutional and academic policy, structures, attitudes and culture, resource allocations, and pedagogy are critical to achieving the new educational model and cultural change.
2. The interrelationship between these factors is dynamic and depends on the set of existing conditions of any given university.
3. Changes in these factors will take place as an evolution, building on initial changes or adjustments to become more profound or deep and pervasive as faculty, students, and staff become more interested and demand to be included.
4. The change pathway is not linear nor pre-established for any university recognizing the differences and needs for each university to establish and follow its own path.
5. The strategic interventions will drive the change process for the pilot universities.
6. Leadership within the university is critical to creating a stimulating environment for change. The project must provide critical change management orientation and support for this to take place.

Type 2 Assumption that applies to GCHERA network

The Change pathway differs for the GCHERA Member Universities because the project will be working through the GCHERA Member Associations to catalyze change among their member universities. The following assumption applies to the case of GCHERA institutions.

7. Many universities within the GCHERA Network do not recognize or accept the need for university transformation. Therefore, the GCHERA Associations, acting as Intermediaries, need to include in their strategies the Advocacy for university

transformation among their university members. This will be a strategic focus in promoting change across the GCHERA networks.

Type 3 Assumptions

Type 3 assumptions that apply to Pilot Universities

1. The Pilot University leadership is committed to the change process and the changes will be institutionalized by the project's end.
2. The University leadership is in condition to overcome key obstacles to change, including resources, faculty and systemic attitudes, traditions, and beliefs about the role of faculty and the educational system, resource constraints, and institutional constraints (including tenure and accreditation systems).
3. The Pilot Universities have the resources necessary to dedicate to the change process or will be able to obtain the necessary resources.

Type 3 assumptions that apply to GCHERA network

4. GCHERA leadership is dedicated to University Transformation and will support its member Associations in that process.
5. There is a growing recognition among GCHERA Member Associations and their member universities of the need to change to become more relevant to students and university stakeholders. This is critical for university leaders within GCHERA to engage in university transformations.
6. Additional resources will be required for many universities in Africa, South-east Asia, and Latin America to undertake a transformative change process. There is interest among donor groups that will make resources available.

Partners/Collaborators

Partners
The project counts on critical partners and collaborators to achieve the expected outcomes. These are:

EARTH University: EARTH University was created as an innovative, student-centered university in 1986. With its 30 years of positive experience in the implementation of its holistic, innovative educational model, the five key elements of success were identified as key to the success of the education of its graduates. Therefore, EARTH's educational model and over 30 years of experience is a principal resource and partner to ensure the success of this project. EARTH University will provide many of the Subject Matter Experts in the areas associated with the five key elements of success. EARTH will also support the project in capacity development and as a source of relevant information on the five key elements of success.

GCHERA: GCHERA offers the project a global focus and access to a network of over 900 higher educational institutions of agriculture and life sciences from around the world. GCHERA's strategic action plan focuses on the Transformation of University Education, to prepare

Graduates with the ethical foundation, knowledge, skills – especially leadership, entrepreneurship, and creativity - to succeed in their future careers as agents of positive change in addressing global challenges in agriculture and life sciences. At the same time, many GCHERA Member Association Universities, have comprehensive innovative educational models, and/or are introducing innovative pedagogy and courses in their educational models to enhance the graduate profile of their students. Therefore, as a partner, GCHERA can provide innovative models and experiences that the project can share with others, while at the same time, they are a target of the project, to educate their Member Universities on the need to change and to support their efforts of enhancing change. GCHERA Member faculty will also provide a reliable source of experience and knowledge in critical areas to act as Subject Matter Specialists and panelists for webinars, and conferences.

American University of Beirut: AUB is the lead institution on this project. As the lead institution they themselves are undergoing a transformation process, incorporating the goals, and expected outcomes of the project, to lead by example. As a larger, non-profit university they provide a leadership platform across the global stage which is critical to engaging our target universities, both the pilot universities and the GCHERA Association Member Universities. They will provide critical leadership, as well as academic, administrative, logistical, and financial management support to the project.

Pilot Universities. These are three universities located in the Yucatan Peninsula of Mexico and one in Haiti that are primary targets of the project's efforts to successfully introduce "transformative change" around the critical five elements of success. As pilot universities, they will learn from each other's experiences, the innovations taking place at GCHERA Member Universities, EARTH University, Zamorano University, and elsewhere. They will share their experiences among themselves, in their own regions and globally through the GCHERA network.   They have been selected for their vision and commitment to the transformation process and because of their understanding of the need to change, convinced that the expected results will create a more relevant and effective educational experience permitting them to graduate professionals better prepared to make substantial, positive contributions to their communities, countries, and families.

W.K. Kellogg Foundation. The WK Kellogg Foundation is a critical partner. As an original and continued partner of EARTH University, they envision this project as critical to sharing and scaling up on their successful investments to EARTH University to positively impact agricultural education in Mexico and Haiti and globally through the partnership with GCHERA. They will provide critical guidance and financial support to the implementation of the transformation processes with the pilot universities and to sharing across the GCHERA platform. They will also support efforts to expand the university transformation efforts through identifying additional strategic donors.

Collaborators:

The project will count on many collaborating institutions and universities. Critical partners include:

Zamorano University, Honduras.

Zamorano offers another successful model of innovative agricultural education in Latin America with similar characteristics of those emphasized in the project. Their many years of successfully educating students from throughout Latin America and beyond using the "Learn-by-Doing" educational model, and critical elements such as community engagement, entrepreneurship, and leadership provides another relevant model of higher education should be shared and learned from.

GCHERA Associations & Member Universities
There are several GCHERA Associations and universities within the GCHERA network which have innovative models of agricultural education in line with the goals of this project and/or that are engaging in introducing innovative changes to their curriculum or courses aimed at integrating similar concepts and education goals for their graduates.
These cases will be shared with the pilot universities and with other GCHERA Association member universities and Associations as catalytic triggers for change across the network.

GCHERA Association Member Universities:
UniLaSalle University, France
Purdue University
Iowa State University
Ohio State University
Wageningen University
Ashesi University

GCHERA Member Associations:
RUFORUM (Regional Universities Forum for Capacity Building in Agriculture)
AMEAS (Mexican Association of Agricultural Higher Education)
AAACU (Asian Association of Agricultural Colleges and Universities)
APLU (Association of Public and Land-Grant Universities)
APAARI (Asia Pacific Association of Agricultural Research Institutions)
Among others.

Other Potential Collaborators
For the project to act as a catalyst for change around the world, it will be necessary to reach out to other actors and bring them into the network. New Universities that are being created applying the five elements of success, other universities engaged in university transformation outside of agricultural and life sciences and other Foundations. These will all be critical to the success of this project reaching beyond the pilot universities and engaging in university transformation beyond the recognition of the need to change.

The project has presently had contact and interaction with the following potential collaborators.

New Universities

Universidad Privada Abierta Latinoamericana (UPAL) in Bolivia which is creating a new university in Samaipata, Bolivia focused on agricultural, social entrepreneurship, and tourism

and plan to introduce the five key elements of success. Their leaders have participated in some of the project events at their own cost, and the project has provided counseling and advice as they begin to plan their new university, modeled on EARTH University.

Universities outside of the Agricultural and Life Sciences network involved in Transformation Initiatives:
Olin College of Engineering
University of Sussex, Brighton

Foundations

The **MasterCard Foundation** which is supporting the RUFORUM in Africa and has shown interest in the project's goals and results.

Key Progress Markers

In Theory of Change, the preconditions to reaching the Long-Term goal are the outcomes defined along the pathway map which must be achieved before the next stage or level of the path can be reached. As laid out in the two Project Conceptual Maps, the pathway leads to a transformed university recognized for its student-centered educational model based on the five elements of success practiced at EARTH University and elsewhere. Graduates will become ethical leaders, with greater social consciousness, an entrepreneurial mentality and skills, and the essential soft skills to enable them to contribute to a more equitable, sustainable, and a more viable agricultural sector, and more local and global economic development.

The project must demonstrate to key stakeholders the progress that is being reached in achieving change among the target universities along the pathway defined in the conceptual map. As opposed to milestones indicators[9], which focus on key events, activities or decisions that are reached during the project implementation, the Theory of Change progress indicators are expected to inform on the progress of outcome achievement along the pathway as conceived by the Theory of Change (see ITtoolkit.com. 2020). The project will implement both Milestone Indicators to monitor project implementation as well as Progress Markers to monitor advancement in achieving the outcomes along the change pathways.

In the case of university transformation, the change process does not necessarily follow a sequential pathway and can be more of an evolution through time. From the Transforming Higher Education Project vision, we should evaluate whether the planned changes have taken place along the pathway, particularly in the Intermediate-Term. Therefore, a series of progress indicators are proposed which will provide project stakeholders with evidence that change is taking place along the Conceptual Map and that the changes are increasing over the time period of the project. These will be collected biannually as part of the project monitoring

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[9] Milestone indicators will be used as part of project monitoring to inform on the implementation of the project plan at the project level and by the project partners; the pilot universities and GCHERA.

process and will be analyzed by the project team to evaluate the progress of the pilot universities and within the GCHERA network.

However, the question as to whether a specific university is transforming itself according to the change vision it set for itself is more complicated than whether specific changes are taking place. As mentioned earlier Eckel, Green, and Hill (2001) define university transformation as consisting of two components: deep cultural changes in combination with pervasive change across the university and their interrelationships throughout the university educational system. An analysis of whether transformational change is taking place requires a more in-depth study than that proposed here but should be considered as part of project activities. How deep and pervasive is the change that is taking place within the pilot universities and what are the factors that account for that change should be evaluated towards the end of the project? This will be considered as a project activity at the appropriate time but is beyond the scope of this narrative.

Progress Indicators for the Pilot University Conceptual Map

The Progress Indicators for the Pilot University Conceptual Map are provided below for the Short and Intermediate Terms as well as some early indicators of Long-Term Change are included. Targets are also presented for each indicator over the three years of the project.

Progress Indicators for the Pilot University Conceptual Map

Time Period	Expected Outcomes	Indicators	Targets 2019	Targets 2020	Targets 2021
Short-term	Awareness of Need for Change by senior leadership	1. Public Statement or publication of need for change 2. Formation of university task force to evaluate need for change	1. At least one 2. One		
	Commitment to Change	1. Public written or oral statement 2. Agreement committing to change (AUB) 3. Creation of university task force to lead change process 4. Address to students and faculty on Change	1. At least one 2. One 3. One 4. One		
	Vision of Change	1. Change Agenda 2. University Mission, Vision or policy Statements reflects change	1. One 2. One		
Intermediate	Principal Expected Outcomes				
	Holistic student centered educational model based on enhanced Experiential/practical learning pedagogy	1. Guide document on practice of experiential learning 2. Percentage increase in Hours dedicated to experiential/practical activities 3. 20	1. One 2. 10 3. 20	2. 25 3. 40	2. 50 3. 60

		3. % of courses incorporating Experiential Learning			
	Incorporation of values and ethics in educational model	1. Document of systematic program on education of values and ethics	1. One		
		2. % Implementation	2. 10%	2. 30%	2. 50%
	Enhanced community engagement as key component of educational system	1. Document on systematic community engagement strategy	1. One		
		2. % Implementation	2. 10%	2. 40%	2. 60%
	Enhanced entrepreneurial learning as key component of educational system	1. Document of systematic entrepreneurial learning	1. One		
		2. % Implementation	2. 10%	2. 40%	2. 75%
	Enhanced learning of conflict resolution as key component of educational system	1. Document of systematic education of Conflict Resolution	1. One		
		2. % Implementation	2. 10%	2. 40%	2. 75%
	Supporting Expected Outcomes				
	Changes to curriculum or courses	1. Number of enhancements (at least one for each key element of success being introduced)	1. Two	1. Three	1. Five
	Changes in policy supporting elements of success	1. Number of new enabling policies (at least one for each element)	1. One	1. Two	1. Three
	Changes in structure	1. Number of committees to orient and lead incorporation of key elements of success	1. Two	1. Three	1.
		2. Two	2. Three	

		2. Number of leaders named to coordinate incorporation of key element of success			
	Increase resource support & infrastructure	1. Number of elements with greater resources 2. Number of new infrastructure to support changes	1. Two 2. One	1. Three 2. Two	 2. Three
	Positive change in student & faculty attitudes	1. % students satisfied with new educational model 2. % Reduction in student attrition 3. % faculty satisfied with new educational model	1. 25% 2. 5% 3. 50%	1. 50% 2. 10% 3. 75%	1. 75% 2. 25% 3. 90%
	New pedagogy	1. % courses offering experiential learning/increased practicum	1. 15%	1. 40%	1. 60%
Long-term early indicators	Positive University Recognition	1. Increase student applications 2. Increase graduation rate		1. 10% 2. 5%	1. 20% 2. 10%
	Positive graduate recognition	1. % increase in employment by graduation		1. 5%	3. %10

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Progress Indicators for the GCHERA Conceptual Map

Time Period	Expected Outcomes	Indicators	Targets 2019	Targets 2020	Targets 2021
Short-Term	Awareness of Need for Change by GCHERA Associations	3. Public Statement or publication of need for change 4. Introduction of Topic in Annual Assoc. Conference	1. at least 1	1. at least 3 2. at least 2	1. at least 4. 2. At least 4
Short-Term	Awareness of need for change among GCHERA Member Universities	5. Public Statement or publication of need for change 6. Participation of university in project conferences on topic	1. at least 3 2. at least 9	1. at least 5 2. at least 18	1. At least 7 2. at least 30
Intermediate – Term	Commitment to Change by GCHERA Associations	1. Public written or oral statement 2. Agreement committing to change (AUB)		1. At least 2 2. At least 1	1. At least 3 2. At least 2
Intermediate – Term	Commitment to Change by GCHERA Member Universities	1. Public written or oral statement	1. At least 2	1. At least 4	1. At least 6
Intermediate – Term	Structural Change/ steering committee	1.Creation of steering committee	1.At least 1	1.At least 2	1.At least 4
Intermediate – Term	GCHERA Member Universities Introduce Change	1. Document or presentation on new innovation or change to educational system		1.At least 2	2.At least 4
Resources Mobilizations	External Financing Resources	Number of proposals submitted for new Transforming Higher Education Initiatives		1. At least one	2.At least two

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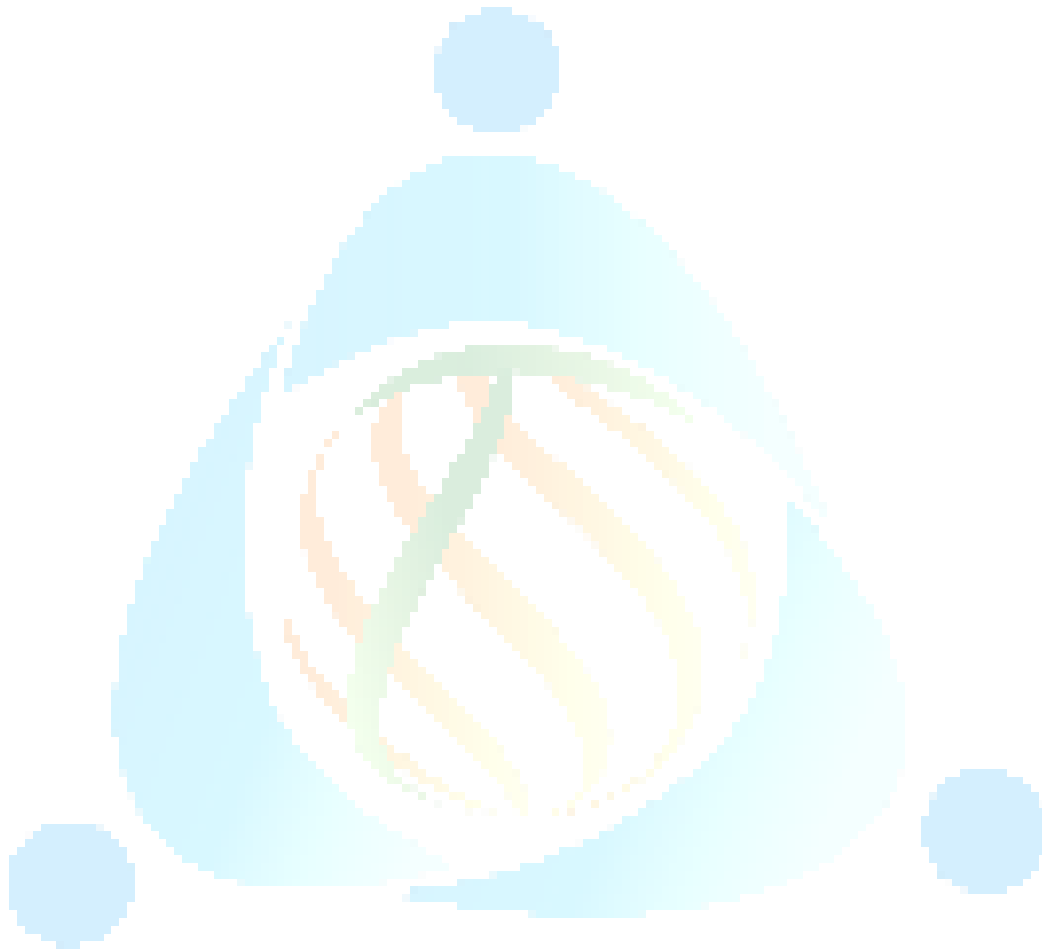
APPENDIX 1 Pilot Universities Conceptual Map

GOAL
Prepare university graduates as "agents of change": ethical leaders that serve society –who are creative and innovative problem solvers contributing to improving the well-being of their communities and countries by positively affecting the environment, promoting peace and understanding, and respecting diversity.

Positive IMPACTS
- Greater Peace and Prosperity
- Environmental Sustainability/ Climate change
- Social and economic improvements for communities & countries.
- Reduced corruption
- Greater Income equality

University recognized for Innovative Student-Centered Educational system, quality of graduates, innovations. and sustainable solutions.

Long-term Outcome

Graduates as ethical agents of change, proactive problem solvers, offering sustainable solutions

Intermediate Outcomes

New Curriculum / Courses

New Pedagogy

Enabling Policies

PRINCIPAL EXPECTED OUTCOMES

Ethical Leadership, Community Engagement, Social Entrepreneurship, Experiential learning, Conflict Resolution

Enabling Resources

Culture & Attitudinal Shifts

Structural Changes

Innovative Holistic, Values-based, Student-Centered Educational System

Short-Term Outcomes

VISION FOR CHANGE

COMMITMENT TO CHANGE

AWARENESS OF NEED FOR CHANGE

STRATEGIES

Change management Coaching & Resources

Capacity development

Knowledge & Info Sharing

APPENDIX 2 GCHERA Network Conceptual Map

GOAL
University Transformation to prepare university graduates as "agents of change": ethical leaders that serve society –who are creative and innovative problem solvers contributing to improving the well-being of their communities and countries by positively affecting the environment, promoting peace and understanding, and respecting diversity.

Positive IMPACTS
- Greater Peace and Prosperity
- Environmental Sustainability/ Climate change
- Social and economic improvements for communities & countries.
- Reduced corruption
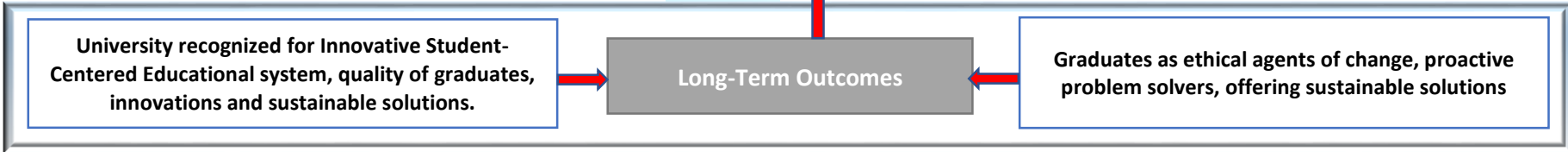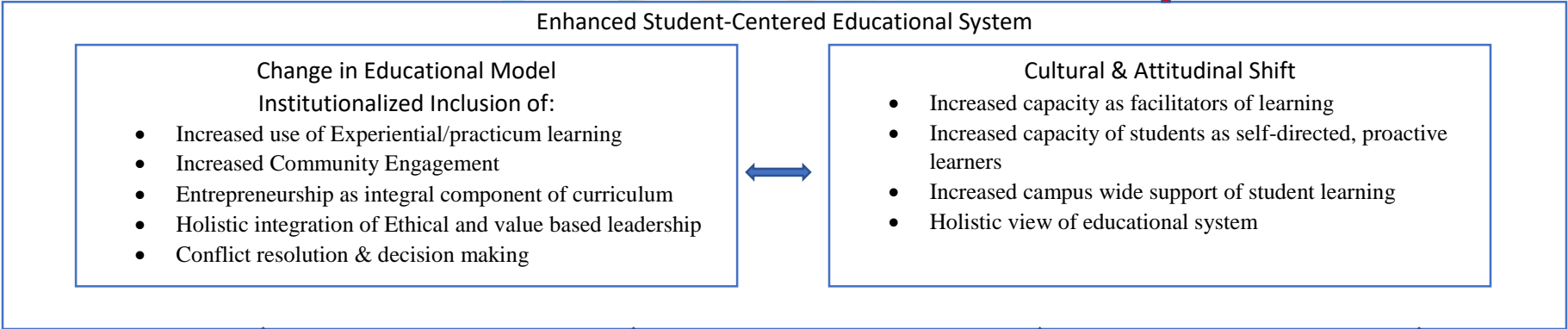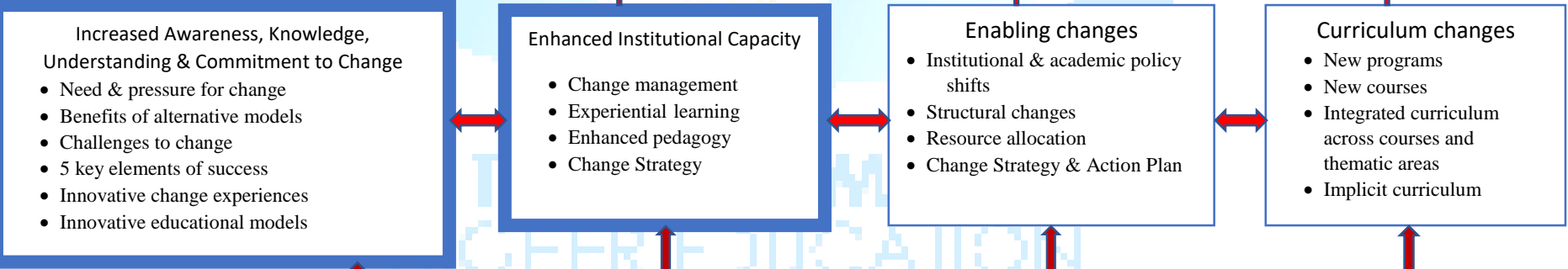- Greater Income equality

University recognized for Innovative Student-Centered Educational system, quality of graduates, innovations and sustainable solutions.

Long-Term Outcomes

Graduates as ethical agents of change, proactive problem solvers, offering sustainable solutions

Long-Term Outcomes

Enhanced Student-Centered Educational System

Change in Educational Model Institutionalized Inclusion of:
- Increased use of Experiential/practicum learning
- Increased Community Engagement
- Entrepreneurship as integral component of curriculum
- Holistic integration of Ethical and value based leadership
- Conflict resolution & decision making

Cultural & Attitudinal Shift
- Increased capacity as facilitators of learning
- Increased capacity of students as self-directed, proactive learners
- Increased campus wide support of student learning
- Holistic view of educational system

Intermediate Outcomes

Increased Awareness, Knowledge, Understanding & Commitment to Change
- Need & pressure for change
- Benefits of alternative models
- Challenges to change
- 5 key elements of success
- Innovative change experiences
- Innovative educational models

Enhanced Institutional Capacity
- Change management
- Experiential learning
- Enhanced pedagogy
- Change Strategy

Enabling changes
- Institutional & academic policy shifts
- Structural changes
- Resource allocation
- Change Strategy & Action Plan

Curriculum changes
- New programs
- New courses
- Integrated curriculum across courses and thematic areas
- Implicit curriculum

KEY

University Outcomes

Project supported GCHERA Assoc. & Univ. Outcomes

STRATEGIES

Change Advocacy & Institutional Strengthening

Networking and Knowledge Sharing

Resource Mobilization

APPENDIX 3 Milestone Indicators to Monitor Project Implementation

TRANSFORMING HIGHER EDUCATION PROJECT

PROJECT MILESTONES

It is argued that the definition of Milestones for a project allow managers and stakeholders to evaluate the successful implementation of the project in time and space. Milestones represent significant moments during the implementation of the project that indicates that the project is headed in the right direction and on time. They may be significant and priority events, results or decision points, that are important to the overall success of the project's implementation. They normally associated more with actions and not as much results. They therefore are not usually associated with progress indicators in the Theory of Change literature.

The online itToolkit magazine states that (https://www.ittoolkit.com/articles/project-milestones):

"From a practical perspective, and depending on project circumstances, milestones can be any of the following:

- The completion of any highly significant task, event, occurrence or decision.
- Reaching a significant checkpoint or phase in the project lifecycle.
- Achieving a specific "percentage complete" for any given amount of work.
- The production of one or more planned project or process deliverables.
- The usage of a specific amount of funding, the passage of a specific amount of time, or the utilization of a specific number of resource hours.
- And, above all, any significant circumstance or event unique to a given project."

Based on this, the following Transforming Higher Education Project proposes the following MILESTONES for the project, many of which have been reached. These are taken for the most part from the Project Proposal.

General Project Implementation

1. Signing of the Project, June 30th, 2018.
2. Project Launch, Contracting of Project Director
3. Agreements signed with three Pilot Universities
4. Orientation Workshop held at EARTH University with wide participation by pilot universities and GCHERA institutions.
5. Publication of Five Elements of Success
6. Project Website goes online
7. Yearly Project Monitoring & Technical Report
8. At least one new university outside GCHERA incorporates at least 3 elements of success

9. 3 Elements of success networks operating 2020 with over 50 participants
10. Communications Strategy developed and operational
11. Newsletters published & distributed (2019, 2020, 2021)
12. Webinars on key elements of success (2020, 2021)

Pilot University Implementation

1. Designation of Pilot University Facilitators and Technical Orientation Committees established
2. Written Change Agendas and Action Plans by three Pilot Universities approved
3. Designation of leader and orientation committee for each element of success to be implemented by pilot university
4. Initiated change agenda implementation in at least three elements of success
5. 50% of pilot university faculty are practicing experiential/action based learning by 2020
6. Implementation of %50 of systematic program for each of element of success
7. Creation of a well-designed systematic program carried out with comprehensive planning for each element of success in change agenda: community engagement 2020
8. Creation of a well-designed systematic program carried out with comprehensive planning for each element of success in change agenda: entrepreneurship 2020
9. Implementation of 50% of Action Plan 2020
10. Review and reformulation of Change Agendas 2020
11. 50% of students are participating in new educational model
12. 50% of graduates have participated in new educational model
13. Implementation of 75% of Action Plan
14. 60% graduates have participated in new educational model 2022

GCHERA Implementation

1. GCHERA Conference on Transforming Higher Education 2019
2. Two webinars held in 2019
3. GCHERA Conference on Transforming Higher Education 2020
4. Four webinars held 2020
5. At least 5 GCHERA Universities demonstrate & share innovative changes to Curriculum in support of Experiential & action based pedagogy
6. At least 2 GCHERA Associations introduce Transforming Higher Education in their agendas by 2020
7. At least 4 GCHERA Associations introduce Transforming Higher Education in their agendas by 2021
8. Final Exit Project Workshop sharing project successes 2021