Ansanm: A Cross-Cultural, Interdisciplinary Approach to Learning Human-Centered Design

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Abstract

In order to improve student proficiency in engineering professional skills, societal awareness, and global competencies the Harding University engineering department has initiated a long-term partnership with a primary school in northern Haiti called "Ansanm" (a Haitian Creole word meaning "together"). Through this partnership, the department has provided a cross-cultural, service-learning context for students to learn the principles of human-centered design (HCD). The HCD paradigm seems to have merit in improving engineering students' professional skill set and societal awareness. As the nature of this program is human-centered, the Ansanm partnership intentionally includes Harding's professional counseling department in order to provide rich insight into the assessment of human needs. This assessment is then fed back into the engineering design process exercised by engineering students engaging in the partnership. Additionally, care is taken to ensure a sustainable relationship with the Haitian partners by adhering to development principles supported by engineering education and development literature. Through this partnership, students at Harding are able to employ and learn the design process of HCD, integrating societal awareness into technical decisions.

Introduction

The formidable challenges confronting the twenty-first century engineer call upon engineering higher education programs to instill in their graduates a diverse array of skills not typically found in traditional engineering curricula. The National Academy of Engineering's *Engineer of 2020* calls for engineering to adapt to the ever-changing society in order to remain relevant by honing within the burgeoning engineer strong analytical skills, practical ingenuity, creativity, good communication skills, resilience, flexibility, and several other professional and personal skills.[1] Furthermore, the inevitable engineering problems of the near future dealing with constrained resources, akin to the NAE's *Grand Challenges for Engineering*, necessitates that engineers be proficient in their societal awareness as well as their ability to integrate such awareness into their designs.[2]

Human-centered design (HCD) is a significant trend that has recently emerged in engineering design education. This paradigm certainly has merit in that it seems to address the professional skills and societal awareness needed by the twenty-first century engineer.[1] HCD has been characterized as "deriv[ing] its criteria from a community of users in whose worlds designed artifacts may have to find a place together with their users, bystanders, instructors, and critics".[3] Essentially, the HCD approach considers all of the human stakeholders who will interface with a designed system, not simply the designer and the user. This design paradigm has been generally

been identified as a design learning method that supports professional skills transferrable to success in the engineering profession.[4]

Desiring to create an HCD context for students in order to better equip them for engineering in the twenty-first century, the authors collaborated to form the Ansanm program."Ansanm" is a Haitian Creole word that means "together." This word captures the spirit of a collaborative service-learning partnership involving the Peltan Christian Primary School in northern Haiti, and the professional counseling and engineering departments at Harding University. Both departments seek to partner with this primary school by primarily focusing on their relationship together while working on projects related to HCD that appropriately grow out of the relationship.

The Ansanm partnership is interdisciplinary in nature as both Harding's engineering and professional counseling programs interface with the same Haitian partners. As the engineering department designs appropriate technology systems for the partners in Peltan, Haiti, the professional counseling department works together with the same partners provide educational training and assess the partners' felt needs. While each academic program has its own learning objectives, the involvement of professional counseling is significant to engineering as they assess the emotional, educational, and societal needs of our partners. In an HCD context, such assessment feeds directly into the design process exercised by our engineering students.

The intent of this paper is to describe the structure of Ansanm as a type of action-focused research. We demonste Ansanm both as a program framed largely by engineering educational research but also as a program that can motivate research questions in engineering education. This paper serves to illustrate the motivating factors in the formation of the program, to explain the role of the interdisciplinary connection with professional counseling in the program, and to briefly depict the results of the first year. We conclude by reflecting on the student experiences of the first year and considering the generalization of this program across other universities.

Structure of Ansanm

I. Overall Description

As previously introduced, Ansanm is a partnership among Harding's engineering and professional counseling department, as well as the Peltan Christian Primary School. Each partner has a clear role in the relationship to the other partners, and the learning grows out of these relationships. This paper primarily portrays Ansanm through the lenses of the engineering education component, but the importance of collaboration with each partner will also be explained. The nature of this three-fold partnership among is illustrated in Figure 1.

The difficulty of implementing a service-learning program like Ansanm is that the service goals of the project can easily diverge from the learning goals. While service-learning programs have well-documented strengths associated with them, in order to be properly implemented, such programs must have four key characteristics associated with them: *academic connection* (relevant to a course's material), *service*, *reflection* (participants' documented analysis on the work performed in the partnership), and *reciprocal partnerships*.[8] Ansanm's demonstration of

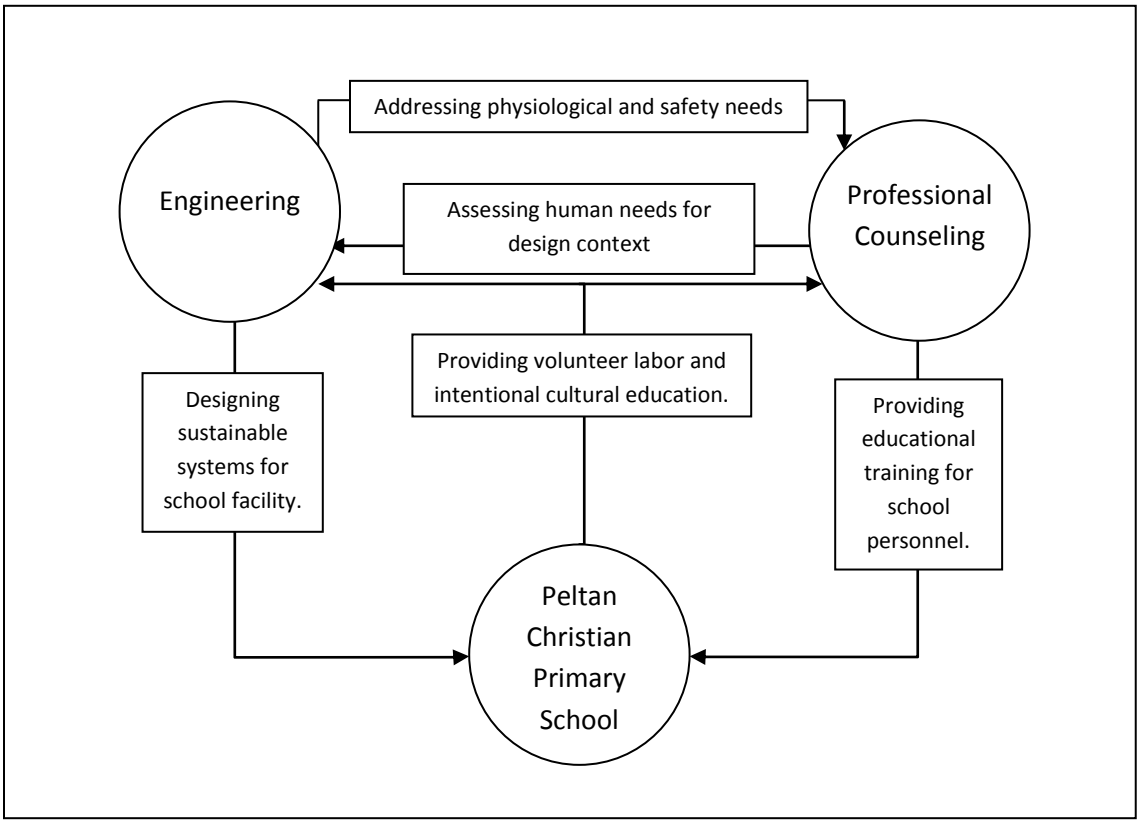

Figure 1: A depiction of the partnership of Ansanm. The outgoing arrows represent what service is given by a particular partner, and the incoming arrows represent what service is received by a particular partner.

these first three characteristics are described briefly here, and the demonstration of reciprocal partnership is described in greater detail in the following subsection.

By its design, the work of Ansanm maintains an unambiguous *academic connection* to engineering design learning. The partnership is managed by students and assessed by faculty in the context of a course called Engineering Service Project (ENGR 330/331). This course was initiated by two of the authors in part to provide accountability for establishing a meaningful academic connection to HCD pursuits through service. ENGR 330/331 is a yearlong sequence of two courses that count three credits toward a student's engineering elective or toward their global literacy credit (a component of the university's liberal arts curriculum). The course is designed for juniors who have completed one year of major-specific engineering science courses. The actual on-site implementation of the designed system is optional, but in the past year, eight of nine students elected to raise funds to travel to Haiti for this purpose.

Certainly, the principles of *service* are clearly found in the Ansanm partnership. The design projects examined are real-world problems encountered by the Peltan Christian Primary School. The students in the course function as a team and are assessed on their teamwork skills, their communication skills, and their documentation of the engineering design process for the given problem. However, the academic expectations of the Ansanm partnership do not abate the altruistic nature of the partnership – rather the service and academic components of the

partnership support one another. By imbedding the Ansanm partnership within the curriculum, the engineering department is communicating unequivocally to our students that we believe in the engineering profession's capacity for service.

Additionally, students are required to *reflect* on their experiences through essays and discussions in the course. As documented in service-learning literature, this meta-cognitive step is critical in order to help the student better understand the connection of the societal context of his or her engineering design problem to the proposed solution.[6]

II. Reciprocal Partnership with the Peltan Christian Primary School

As mentioned previously, *reciprocal partnerships* are key to service-learning. Ansanm seeks to incorporate such a relationship using insights from the last thirty years of development literature and practice. In the past, non-profit organizations typically identified needs in "Third World" countries, then devised ways of meeting those needs with minimal input from the local stakeholders. Current development experts emphasize principles of partnership from the very beginning. Foreigners work alongside locals to identify and prioritize problems and solutions. For example, research methods such as "Rapid Rural Appraisal" (RRA) or "Participatory Rural Appraisal" (PRA) bring to the fore the perspectives of those the nonprofit organization seeks to serve, making sure that those perspectives—those of the local and not the foreign stakeholders—weigh the most. Such methods are not dependent on paper surveys and, therefore, enable researchers to draw out the views of non-literate stakeholders. [16] Organizationally, foreign and local partners share decision-making, responsibility, and accountability with the goal of establishing a sustainable means of meeting perceived needs. "Capacity building" (the efficacy of the local population to better themselves) is not just a catch phrase; it is the goal of such efforts. Partners hope to expand the resources—human and otherwise—of local partners so that in the future, they are less dependent on interventions from the "outside". [17]

On account of one of the author's experience with the nation of Haiti, the Peltan Christian Primary School was selected as a partner in the Ansanm endeavor on account of their belief in sustainability. The church that owns the primary school has a record of building capacity by their attempt to raise and sell fish and their successful endeavor in building a church building with little American aid. In the Ansanm partnership, the Harding players (engineering and professional counseling) serve as a partner to the Peltan Christian primary school rather than a benefactor. All decisions are made in collaboration with the stakeholders at Peltan, and guidance from the Haitian partners in the midst of design is solicited by the American partners. Additionally, the leadership of Ansanm is equally shared by the authors and representatives of the Peltan Christian Primary School.

Furthermore, the Ansanm partnership is a long-term relationship with a commitment of three to seven years. This long-term relationship necessitates that attention be given to the relationship with the Haitian partners in growing to a mutual understanding. One effect of this long-term relationship is that our relationship with the people of Peltan is independent of academic timelines. This allows our students to participate in a design context much more similar to the context of practicing engineers – where the scope of problems does not neatly fit into fifteen- or

thirty-week timelines. The Harding engineering department expects that our ability to design solutions for the Peltan Christian Primary School will improve as each year of the partnership progresses. This improvement will follow our increasing ability to understand and assess the needs of our partners across different cultures.

Finally, the Ansanm partnership is intentionally reciprocal in that the Haitian partners are intentional about what they are contributing to the relationship. While many of the rural people of Peltan are too impoverished to substantially donate to the partnership financially, the Haitian partners volunteer their labor into the implementation of the design project as well as their ideas. Additionally, our partners proffer insight into their language and culture to the Harding constituents of Ansanm.

Factors Motivating the Formation of Ansanm

I. Engineering Education Factors

Ansanm was established at Harding in order to provide a cross-cultural, service-learning program while simultaneously supporting the university and departmental missions of instilling a sense of service within students. By their nature, cross-cultural, service-learning programs in engineering design education employ the concepts of HCD. Students must considerably research not only into the technology that may be used in a system, but also how that technology will affect, be accepted by, and be maintained by the designed system's stakeholders.

As a service-learning program, Ansanm is bolstered by the literature of engineering education. Research has shown that service-learning programs strengthen students' professional skills of teamwork, communication, and lifelong learning,[5] as well as a broader societal awareness while reinforcing their technical analytical skills.[6,7]

In addition to the service-learning component of Ansanm, the program intentionally has a cross-cultural component. The increased need for engineers of the twenty-first century to thrive in a global context has been well-documented.[1, 9] While research is still being done on what educational experiences strengthen the engineering student's global awareness, sources point to study-abroad programs or programs with a cross-cultural emphasis.[10, 11]

II. Institutional Factors

In Harding's institutional environment, Ansanm is extremely relevant. At Harding, a private, liberal arts university, there is a particular challenge to efficiently develop engineering professional skills in a crowded curriculum. Every undergraduate student at Harding is required to take a series of liberal arts credits totaling a substantial 51 credit hours. The benefit of having a strong liberal arts curriculum is that our students receiving pertinent learning towards the awareness and professional skills critical to HCD. However, this required curriculum is not framed specifically within the engineering context. As an engineering department, our desire is that the skills gained in the university's liberal arts curriculum can be readily applied to the engineering design process. Ansanm gives the students necessary training to integrate those skills into the engineering design process.

Furthermore, the Ansanm partnership frames the engineering profession as a profession concerned with helping people. This view of engineering aligns with the passions of our students. In previous years, our students voluntarily sought out opportunities to provide service to others in cross-cultural and domestic contexts, and if possible, the service would be related to engineering. However, the service opportunities often practiced by our students have differing goals from those of that of our departmental learning goals. Ansanm provides an opportunity to integrate the students' well-placed passion for service with the academic goals of learning engineering design.

Interdisciplinary Connection with Professional Counseling

As the Ansanm partnership is designed to develop the skills of HCD in Harding's engineering students, the engineering department recognized the value of expertise in assessing human needs in our Haitian partners at the Peltan Christian Primary School. The purposeful inclusion of the university's professional counseling department provides this program with a unique strength of tapping into a body of knowledge outside the engineering field in order to better the engineering design process employed by our students.

Before discussing the role of professional counseling in this endeavor, one ought to have a clear understanding of what counseling is. There are many definitions of counseling, and most contain the essential elements agreed upon by professional counselors and psychotherapists. The Arkansas Board of Examiners defines counseling/psychotherapy as:

> *"assisting individuals or groups, through the counseling relationship, to develop understanding of personal problems, define goals, and plan action reflecting interests, abilities, aptitudes, and needs. Counseling/Psychotherapy is the application of mental health, psychological, or human development principles, through cognitive, affective, behavioral or systemic intervention strategies that address wellness, personal growth, or career development, as well as pathology."* [12]

There are two points within this definition that are significant to the context of Ansanm. First, a counselor's role is to assist in understanding needs. Once these needs are identified and understood, the next logical step is to address how to meet those needs. This second point, the meeting of needs, is another aspect of the role of the counseling professional. As stated in the definition, these needs do not only pertain to pathology but also to general personal growth, including academic and career development as well as overall personal wellness.

With this definition, it would reason that any person with needs or goals would benefit from a counseling relationship. Throughout its history, Haiti has had and continues to have numerous challenges and needs and thus can benefit from external partnerships that aid in identifying and meeting needs. The professional counselor is trained to assess these human needs and to take an active role in empowering others to meet those needs.

To connect the professional counseling discipline to engineering, one may examine the definition of engineering approved by ABET:

> *"Engineering is the profession in which knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind."* [13]

One may observe that inherent within the definition of engineering is, like professional counseling, the need to address needs "for the benefit of mankind." While the work of an engineer, by this definition, involves addressing needs using knowledge of mathematical and natural sciences, the engineering profession is fundamentally involved with bettering the circumstances for mankind.

However, the assessment and type of human needs addressed in each profession is certainly distinct. The disciplines' connection may best be explained by the early but enduring work of Abraham Maslow, which suggests a hierarchy of human needs.[14] Although there is a lack of evidence to support Maslow's Hierarchy of needs as a theory of motivation (or a theory on why people function and behave as they do), this construct is widely accepted and cited within the psychological community.[15] This hierarchy is often described as a pyramid with five stages and each stage serving as a foundation for the next stage. This pyramid is depicted in Figure 2.

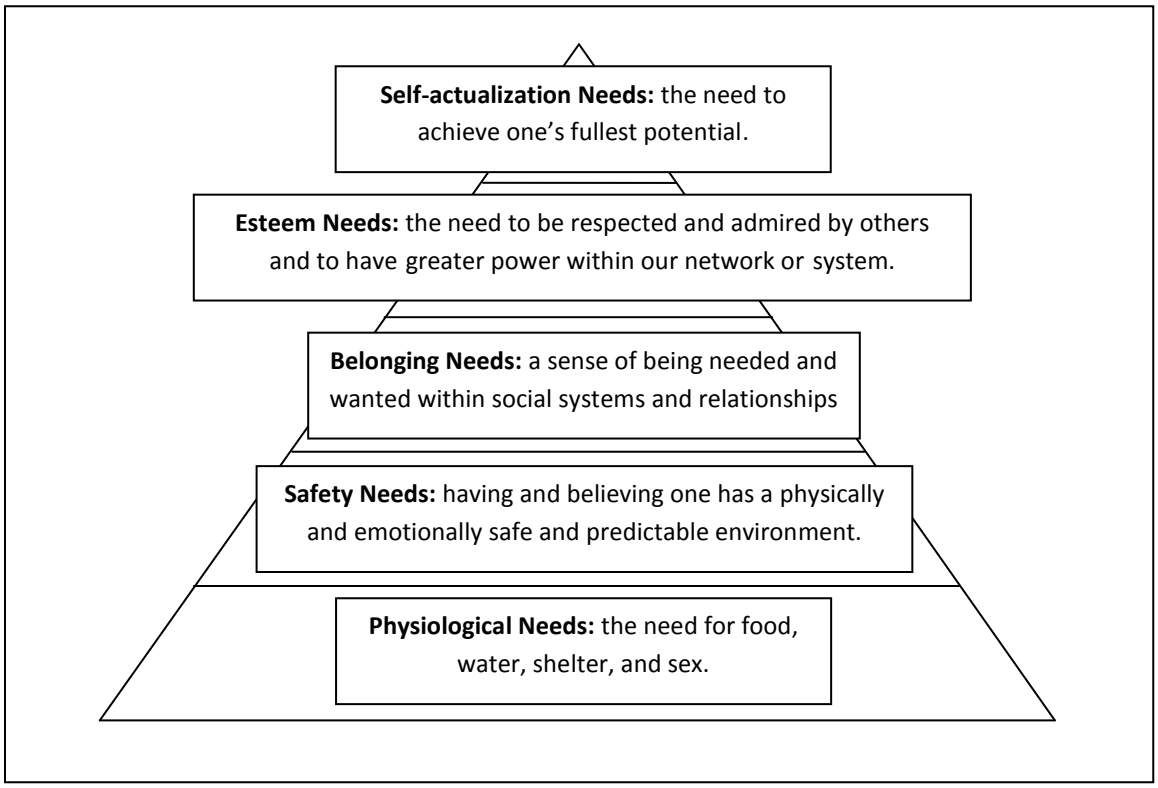

Figure 2: Maslow's Hierarchy of Human Needs.

The hierarchical concept suggests that lower order needs (lowest on the pyramid) must be met first. For example, the primary physiological needs such as food water and shelter must be met bore one can begin to be concerned about a safe and orderly environment. Similarly, one must have a sense of safety and security before the need of belonging can be addressed. In this way each need must be met and act as a foundation to the higher level need above it. This project will mostly be concerned with the needs lowest on Maslow's hierarchy pyramid.

Armed with this theory and other knowledge, professional counselors can assess the needs of children and teachers within the Peltan Christian Primary School in Haiti. This particular school, which serves the extreme poor of Peltan, has little resources for learning, and Ansanm intends to help these schools develop resources in order for the Haitian partners to meet their own needs. One of the goals of the professional counseling component is to identify specific needs to be met and help decide who will be the key players in meeting these needs.

In the context of Peltan, Haiti, the engineering profession is well-suited for addressing the most basic needs by designing physical systems and processes to ameliorate the physiological and safety concerns of the primary school. However, as these lower needs are improved at the primary school, the professional counseling department's educational training (which meets the higher needs on the pyramid) becomes more meaningful. The role of engineering serves professional counseling in this partnership as the engineering component provides technological methods that address basic needs perceived by the counseling department. Additionally, professional counseling assesses the human needs (independent of the technological problems) and portray of holistic picture of the context of the Peltan Christian Primary School – an assessment that certainly informs the students' design process.

Summary of the First Year

Ansanm provided the opportunity for engineering students to uniquely practice concepts from new product development processes with particular focus on developing customer requirements, engineering design decision making and product construction. In traditional engineering problem solving, requirements are given and solutions are found using recently taught science and math concepts. Ansanm presented students the opportunity to glean technical requirements from both explicit and implicit communications given by a real world customer. The students practiced collaborative innovation techniques for generating and evaluating conceptual designs. Travel on site gave students the opportunity to evaluate and complete construction for two projects.

Students conducted live interviews for two projects with the lead representative of the Haitian school. The first project required the students to design a latrine. The number of chambers, storage capacity and available construction materials were communicated by the Haitian Ansanm partner. Moreover, students investigated total lifecycle cost implications of technology decisions in typical developing countries. Such research included the work of Dunmade, who emphasizes "that the developed technologies for the rural areas [must be] technically sound, economically sustainable, socio-culturally compatible and environmentally friendly." [19] After carefully weighing all factors, the students chose a VIP "Ventilated Improved Pit" latrine design that met

all requirements (shown in Figure 3). Multiple layouts and written build instructions were sent to the Haitian school. Local Haitians then constructed the main components of the latrine. The students evaluated and completed details of the venting system during the summer trip.

Figure 3: Student Designed VIP "Ventilated Improved Pit" Latrine

The objective of the second project was to provide clean drinking water to the Haitian school. Currently, water is transported daily to the school property from over a half mile away. Students experienced conceptual design and engineering decision making. Possible solutions were researched and mapped into a decision tree (see Figure 4). The overriding need to make water more plentiful on site led to the design and construction of a well.

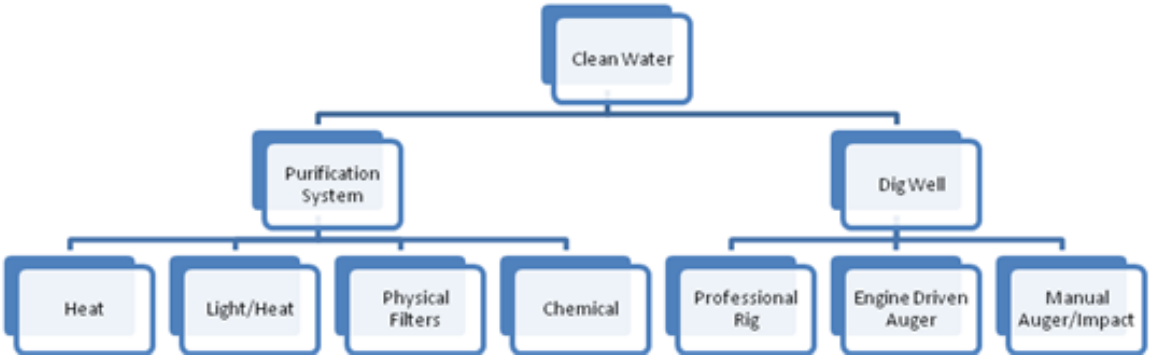

Figure 4: Decision tree used by engineering students to determine solution for clean water

The final construction technique of manual drilling was chosen using a decision matrix (see Figure 5) which rates possible alternatives with respect to customer requirements. All discussions were based on techniques deployed by one of the authors in an industrial environment.

Decision Model		DRILLING ALTERNATIVES					
		Professional		Small Engine		Manual	
Criterion	Weight	Rating	Score	Rating	Score	Rating	Score
Probability of Success	14	4	56	3	42	3	42
Soil Content (rocks, sand, etc)?	13	4	52	3	39	2	26
Maintenance	13	0	0	2	26	3	39
Haitan Ownership	13	0	0	4	52	4	52
Backup Plans	7	4	28	4	28	4	28
Initial Cost	7	2	14	3	21	4	28
Ongoing Costs	7	3	21	2	14	2	14
Environmental Impact	7	1	7	3	21	4	28
Followon Haitian Projects	7	1	7	3	21	4	28
Simplicity	7	4	28	2	14	3	21
Well Location	5	2	10	4	20	4	20
Total	100	25	223	33	298	37	326

Score = Rating * Weight

How to rate an option?

Rating	Description
0	No fit
1	Low fit
2	Fit
3	Good fit
4	Excellent fit

Figure 5: Decision matrix used to determine the best solution to meet customer requirements

In keeping with the ideals of the Ansanm partnership, final well construction consisted of the combined efforts of the engineering students and local Haitians in May following the course's conclusion. Real world obstacles and limited local resources provided valuable experiences for the students. Preplanned alternative construction techniques and genuine hard work and passion by all led to a successfully completed well that will provide drinking water to hundreds of children for several years. Perhaps the more exciting result, however, was that all Haitians working on the construction of the developed knowledge and skills to dig more wells.

In addition to implementing the designed solution of the latrine and the well, the on-site visit included a brief preliminary needs assessment in order to inform the upcoming ENGR 330/331 course as to what their design project will be. Furthermore, a team of professional counseling students and faculty traveled to Haiti two months after the engineering group to conduct a teaching seminar and guide the faculty and administration at the Peltan Christian Primary School through a thorough self-assessment of their needs. Through this process, the primary school determined that as they continue to develop in this partnership with Harding, security of the school would be critical in order to (1) protect small children from venturing onto the nearby highway and (2) protect systems like the well and latrine (as well as future systems) from the abuse of community misuse. This information, along with continued conversation with the primary school director, will give the engineering students a highly appropriate foundation to pursue the engineering design coursework.

Though the Harding engineering department has regarded the first year of Ansanm a success, we have also learned some areas that can be improved in the partnership. Namely, we are looking to improve the often inconsistent communication among our partners by putting an organized structure for communication in place. There is considerable difficulty in achieving consistent and effective communication across both the national and disciplinary cultures inherent in the Ansanm partnership. However, we recognize that the objectives of the partnership are too complex to be solely accomplished by any one partner, and the strengths of the partnership far outweigh the communication obstacles.

Conclusion

In its first year, Ansanm has been a valuable asset to the engineering department and to Harding University. Student comments on the course attest to this fact:

> *"I really like the hands on experience that we get in this class, and the good feeling from getting to help other people."*
>
> *"I have learned more engineering in this class than any other I have had so far."*
>
> *"The problem solving skills I have learned in this class have been the most helpful in my job interviews."*

We fully expect this program to thrive and provide a rich context for research on human-centered design learning. The challenges that await engineering students upon their graduation will certainly require them to employ the principles of HCD. While many institutions are pursing the principles of HCD through service-learning and sustainability engineering design challenges, there are many open questions concerning human-centered design learning. At Harding, through the interdisciplinary approach of Ansanm, we expect and hope to generate further knowledge related to HCD learning as we explore this area through the lenses of our students as well as our partners in professional counseling and our partners at the Peltan Christian Primary School.

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Bibliography

1. National Academy of Engineering (2004). The Engineer of 2020: Visions of Engineering in the New *Century*. Washington, D.C.: The National Academies Press.
2. National Academy of Engineering (2008). *Grand Challenges for Engineering.* Washington, D.C.: National Academies Press.
3. Krippendorff, K. (2006). *The Semantic Turn: A New Foundation for Design*. Boca Raton, FL: CRC Press Taylor & Francis Group.
4. Zoltowski, C., Oakes, W., and Chenoweth, S. "Teaching Human-Centered Design with Service-Learning", Proceedings of the 2010 American Society for Engineering Education Conference.
5. Jiusto, S. and DiBiasio, D., "Experiential Learning Environments: Do They Prepare Our Students to be Self-Directed, Life-Long Learners?", Journal of Engineering Education, Vol. 95, No. 3, 2006, pp. 195 – 204.
6. Oakes, W. "Creating Effective and Efficient Learning Experiences while Addressing the Needs of the Poor: an Overview of Service-Learning in Engineering Education", Proceedings of the 2009 American Society for Engineering Education Conference.

7. Shuman, L.J., Besterfield-Sacre, M., and McGourty, J., "The ABET 'Professional Skills' – Can They Be Taught? Can They Be Assessed?", Journal of Engineering Education, Vol. 94, No. 1, 2005, pp. 41 – 55.
8. Lima, M. and Oakes, W. (2006), *Service-learning: Engineering in Your Community.* Okemos, MI: Great Lakes Press.
9. Lucena, J.C. "Being Political in the Global: How Engineers Accommodate, Resist, and Experience Ambiguity Towards Globalization", Proceedings of the 2002 American Society for Engineering Education Conference.
10. McNulty, S.K. and Enjeti, P. "Connecting Campuses and Building International Competencies with Study Abroad Programs: The Texas A&M University at Qatar Experience", Proceedings of the 2010 IEEE Frontiers in Education Conference.
11. Spodek, S.R., Gerhardt, L., Mook, D.J. "Study Abroad: Impact on Engineering Careers", Proceedings of the 2003 American Society for Engineering Education Conference.
12. *http://abec.arkansas.gov/aboutUs/Documents/act593act753.pdf*, accessed 7/10/11
13. *https://louisville.edu/undergraduatecatalog/previous-years-catalogs/f08_u09/unitinfo/j-b-speed-school-of-engineering/general-information/engineering-profession.html*, accessed 7/12/2011
14. Maslow, A.H. (1943), "A theory of human motivation", Psychological Review, Vol. 50, No. 4, pp. 370-396
15. Soper, B., Milford, G., and Rosenthal, G. (1995). "Belief when evidence does not support theory." Psychology & Marketing, Vol. 12, No. 5, pp. 415-422
16. Chambers, R. (1997). *Whose Reality Counts? Putting the First Last*. Bath, UK: Intermediate Technology Publications.
17. Johnson, S. and Ludema, J. (1997). *Partnering to Build and Measure Organizational Capacity*. Grand Rapids, MI: Christian Reformed World Relief Committee.
18. Dunmade, I. (2009), "Lifecycle Design and Christian Viewpoint in Technology Development for Developing Agrarian and Rural Economies", Proceedings of the 2009 Christian Engineering Educators Conference.

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