

# Developing Global Partnerships in Civil Engineering Education: Lessons from a Five-Year Collaboration with ABP Consult

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## (A) Introduction

Since 2005, the Civil and Environmental Engineering department has incorporated at least one international design project into its year-long, client-based capstone design course.

To date, 118 civil engineering seniors have worked on 28 international capstone design projects in ten countries: Ghana, Haiti, India, Kenya, Nepal, Pakistan, Sudan, Trinidad, Uganda, and Zimbabwe

With the goal of enhancing students' experiences in international capstone design projects, in 2019, the CEE department at Rose-Hulman Institute of Technology (RHIT) established a partnership with ABP Consult, a renowned civil engineering consulting firm in Ghana.

## (B) Reasons for Partnership with ABP Consult, Ghana

1. Mentorship for the student team from a professional engineer in the project source country.
2. Knowledge of the design codes, local construction practices, and local construction materials..
3. Knowledge of the impact of their design decisions on project stakeholders.

## (C) Building Sustainable Partnerships



Met with potential partners during the visit to Ghana, including (a) a civil engineering firm, (b) faculty members at a university, and (c) engineers at a building and road research institute.

## (D) MOU between ABP Consult and RHIT

In August of 2019, a Memorandum of Understanding (MOU) was established between ABP Consult and RHIT to support international capstone design projects collaboration.

Both partners agreed to pursue humanitarian projects in underdeveloped communities in Ghana.

Under the agreement, ABP Consult provides real-world project opportunities, professional mentorship, and technical input while RHIT integrates these projects into its capstone design curriculum to meet educational objectives.

Collaboration includes student design projects, exchange of technical knowledge, and potential joint publications.

The agreement emphasizes experiential learning, global, and societal impact.



Met with the executives of ABP Consult to discuss the framework of the partnership in 2019

## (F) Educational Benefits and Professional Skill Development for Students

### Benefits

1. Students emphasized how international collaboration expanded their "knowledge about different construction and design practices, codes, standards, and regulations"
2. Students described learning to be more flexible in their time management and communication skills to navigate challenges related to cultural differences, language barriers, time zone differences, and delays in obtaining data

### Key Lessons for Cultivating Partnership

1. These partnerships are complex and require ongoing effort
2. Not all partnerships are financially driven.
3. Mentorship programs can be a win-win for all stakeholders.
4. Identifying stakeholder motivations is key to sustainable partnerships.



## (E) Highlights of a Service-Learning Project with ABP Consult Design of Urban Upgrading & Inner-City Development, Kumasi, Ghana



Design of Urban Upgrading & Inner-City Development Kumasi, Ghana (Thompson et al., 2020)



The student team undertook a site reconnaissance trip to Ghana to obtain valuable engineering data used in the design, 2019



## (G) Sustainability and Future Directions

We will use Ruben's BASIC (Behavioral Approach to Intercultural Communicative Competence) to assess interactions in video-recorded meetings between the student teams and their international client.

Each year, we survey students, faculty, and clients involved in the international design project. We will continue with this assessment process and refine it based on the feedback received.

## (H) References

Aidoo, J., Annor, F., Sipes, S., Boampong, K., and Hammett, K., (2020). Building Sustainable International Partnerships Through Capstone Design Projects. Capstone Design Conference.

Thompson, A., Miller, K., Biske, M., Robinson, M., and Brady, P., Aidoo, J., Ohene, F., Sipes, S., Boampong, K., and Shrestha, N., (2022). Our First Collaboration with an International Consulting Firm on Capstone Design Project, Capstone Design Conference, June 6-8, Dallas, Texas