

Cultivating a Village Library in Dwenase, Ghana



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Abstract

Library development in underdeveloped countries is often met with a lack of adequate resources. This off-site project focused on working closely with stakeholders abroad to identify and supply the Dwenase village with appropriate books and resources to cultivate a library. The outcomes of the project included an initial collection of over a thousand books accumulated through local drives and a model for similar types of library development that may be replicated in other locations.

Introduction

The goal of this Interactive Qualifying Project (IQP) was to remotely design a cross cultural model for library development in Akyem Dwenase, Ghana. The objectives of the project were identification of appropriate reading materials for the library, establishment of an initial collection of books, and creation of a model to detail this process of contextual design. Secondary objectives involved engaging the Worcester Ghanaian community and exploring economic methods of shipping resources to other countries. The deliverables include a pilot of a small subset of books, an initial collection of books to establish the library, and a model (final report) that details the approaches taken to complete this project.

This project was an on-campus IQP connected to Worcester Polytechnic Institute's new Global Project Center in Kyebi, Ghana. Professor Robert Krueger is the head of the Ghanaian Project Center and has known Professor Kwabena Kyei-Aboagye for many years. Prof. Aboagye recently became the Chief of Akyem Dwenase. This opened opportunities for collaboration with WPI on rural development initiatives.

The need for library books was expressed to WPI faculty during an initial trip to Dwenase. The local community reminisced about an old library they used to have in the village and how valuable it would be for their community to have one again. Chief Kwabena, known formally to his people as Osabarima Owusu Baafi Aboagye III, advocated for this initiative and helped to further define the needs for the project. This project would serve to foster relationships between Dwenase and WPI.

Specifications for the library collection detailed low reading-level books to facilitate improved English reading ability and a focus on children's materials to help engage the youth of the community. Students in the local primary school and Junior Secondary School (JSS) were identified as the main userbase of the new library. The condition of the books in the schools was unfortunately very poor. There was urgency from the Chief to raise the reading ability of the children in the village, which would help the JSS students pass their Senior Secondary School (SSS) Entrance Exams. None of the JSS students from Dwenase had passed the entrance exams for SSS in a few years.

This project successfully provided the village with an initial collection of 1,168 books despite some difficulties and the emergence of the COVID-19 pandemic.

Setting the Project Context in Akyem Dwenase, Ghana

Dwenase is a small village with a population of approximately 2,000 people that lies in the Dekyembour district of the Eastern region of Ghana.¹ The people of Dwenase predominantly belong to the Akyem ethnic group, a subgroup of the larger Akan people.² Similar to many rural areas in Ghana, it is largely underdeveloped but has natural resources like exceptional soil for farming, timber, and gold.³ Figure 1 shows where Dwenase is relative to Ghana. The red tac provides an approximate location of the village.



Figure 1. Dwenase is a small village located in the Eastern region of Ghana.⁴

At the onset of this project, the village had no functioning library. Figure 2 provides an example of the collection of books in the allocated library space. These books were either in poor condition or irrelevant because the reading levels were too complex. Many of the educational books that were available contained university-level content, such as "Calculus for Business". To help the Dwenase children develop important skills learned through reading: (including phonologic awareness, fluency, vocabulary and memory), simpler books needed to be provided.



Figure 2. An image of the existing library collection that was sent to our team via one of the students at the Global Project Center.

The school children have had difficulties reinforcing their learning, and thus the village has had an exceptionally low passing rate for the SSS entrance exam, known as the Basic Education Certificate Exam (BECE).

SSS is more nuanced towards specific vocations, and thus is where the Ghanaian children can find what they enjoy in order to make it their profession. However, if they are unable to pass primary school, and subsequently secondary school, they cannot progress further in their education and may resort to other means of income.

One example could be the problematic illegal gold mining that is persistent within the community. The Chief reported that no child in Dwenase had passed the BECE exam within the past three years.⁵

Understanding the Ghanaian Education System

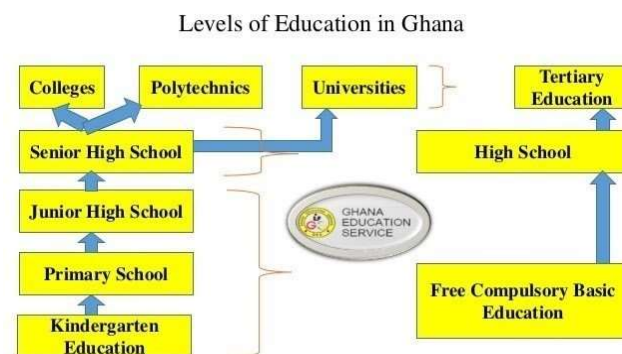


Figure 3. A 6-3-3-4 education scheme.⁶ This education system involves 6 years in preschool and primary school, 3 years in Junior Secondary School, followed by 3 years in Senior Secondary School.

In 1952, tuition-free primary and middle school education was introduced in Ghana.⁷ In the following years, the Education Act of 1961 was passed, which stated that every child must attend school, or their parents would be fined. As a result, the enrollment rate increased, yet the educational system was ill equipped for providing adequate education. After educational reforms

in 1987, the inefficient system was altered into the current system that is used today.⁷ Figure 3 represents a 6-3-3-4 education scheme. Students are expected to spend six years in preschool and primary school, three years in junior high school (Junior Secondary School), followed by an additional three years in high school (Senior Secondary School). In this system kindergarten is optional, and typically few students continue to the tertiary education level.

Equipping a Library with Appropriate Resources

The most important aspect of library development is identifying appropriate resources. In Ghana, many rural libraries are set up by non-governmental institutions, affluent individuals, or other Western sources.⁹ After these libraries are instituted, they become inactive as they lack culturally relevant material and ultimately, community support. Due to the inactivity, these libraries become a mere “meeting place for locals” like the Besease, Asenenaso, Jachie, and Bonwire community libraries.⁸

Prior to the start of this project, Chief Kwabena had formed a committee of retired experts to help improve education in Dwenase. The committee was referred to as the “Dwenase Education Committee.” Its members included a Ghana Education Service regional director, a headmistress with decades of experience running primary schools and Junior Secondary Schools, a district education officer, and a local teacher who sometimes runs after school programs.

Chief Kwabena provided the phone numbers of these individuals as well as another headmaster and the leader of a Dwenase youth group. These local stakeholders communicated with our team over WhatsApp about books that would be most appropriate to start an initial collection for the Dwenase library.

There are two questions we ask when trying to stock a library: “**What are the needs of the users?**” and “**Is there community support for the library?**” These questions are critical in rural library development to make sure actual needs are met and the library remains running.⁹

We interviewed Chief Kwabena and asked him many questions pertaining to the village needs for the library. He expressed that the library should be a facility that is easily accessible to both the primary school and the Junior Secondary School. The library could ideally be a learning hub for the whole village as many adults had also expressed interest in self-learning.

From this preliminary interview and other discussions with the library committee, it was determined that the village did not have a large collection of books in general. The schools did not have enough textbooks and other educational resources (i.e. streamline internet, computers) for the required curriculum. They had received donated textbooks that are in good physical condition however, the donated books are not appropriate for their audience.

Libraries do not have to contain solely books. The Chief mentioned that the Dwenase library could be a multimedia installation that contains arts, crafts, audio recording of oral history and other forms of media that represent and celebrate the character and traditions of the people of Dwenase. His hope is that the final library will be similar to the library described above. However, due to plausibility, the immediate concern was identifying the type of books that primary and middle school students could use to bolster their learning.

Applying the Co-Design Process to Our Project

The idea of co-designing the library with the village allowed the team to consider our previous research and incorporate it into a result that also coincides with what the village wants. For example, by working with our sponsor and his associates, the books collected would reflect the need for bolstering children’s learning in order to better prepare them for the BECE exam, while incorporating books to captivate the readers at the same time. The cultural relevance of these books would appease and gratify the audience as they read, as well as unconsciously better their academic skills, which are required for the national exam. This idea paralleled the team’s research on ethnography, the study of human culture.

It is a process in which knowledge is gained through intensely engaging with a group of people.¹⁰ The first step to every design should be to involve those who will be affected by the project, while merging the design created by the team.

In the journal “Students’ Ways of Experiencing Human-Centered Design,” the authors believe that human-centered design, can be used to overcome the tedious challenges that designers face with understanding the project.¹¹ This form of design is also similar to the concept of co-evolutionary development proposed by Susan Murcott. According to Murcott, co-evolutionary development should consist of local expertise and resources, egalitarian partnership, and knowledge sharing.¹²

Devising a Collection Policy for Appropriate Books

The collection policy is a list of criteria that was reviewed when determining the suitability of a book for the Dwenase library. The list of **criteria focused on reading level, genre, cultural relativity, physical condition, and coordination with curriculum**. The policy was used during the culmination of the pilot and was edited as we began to receive feedback in C term.

“Modern engineering for development may employ ideological bias, prioritization of direct economic and technological intervention, and importation of procedures without fully understanding their unintended consequences.”¹³

Running a Remote Pilot to Gain Further Insight

Based on conducted interviews, an initial collection policy was crafted with consideration for the Dwenase Library Committee's ideas. To ensure that this collection policy reflected the hopes and wishes of the Dwenase educators and committee, a pilot was devised. A small subset of books that was readily accessible would be used to gain insight, which would help the team reassess the collection policy.

Each pilot book contained a feedback assessment on the last page. The assessment was straightforward and included only one question. The question asked the students "Did you like this book?" The assessment then prompted the student to fill in their age and complete a face that showed their interest in the book. Figure 4 shows an example feedback assessment with the first two rows completed. From this example, we could assess that student aged 12 enjoyed the book because they finished the face by drawing a smile.

The intention of this assessment was for the children to fill out the cards voluntarily after they were educated about the project and the benefit of their input. After each week, the projected result for the assessments could be communicated with the team by the facilitator or one of the WPI students at the project center via photograph. The team hoped to interview the facilitators to receive their input on the progress of the pilot as well.

Our peers in the ID 2050 class expressed interest in helping to facilitate the pilot by taking the books with them to the Global Project Center.







Age	
12	
8	
	
	
	
	

Figure 4. The feedback assessment attached to the back cover of the pilot books.

A poll was distributed to the class for the team to begin compiling an appropriately sized collection of books. The results of the poll indicated that eight students were willing to transport books in their luggage. At this point, it was determined that approximately thirty-two books could be safely sent so that each person would be responsible for four books. The thirty-two planned books, as well as eight additional books, were brought to the team's final presentation in ID 2050 in B Term. The intention in bringing the extra books was that more students would become interested in transporting books after the presentation.

All forty books that were brought to the presentation were taken by the students. The books arrived in Dwenase with the traveling students in early January. However, they did not make it to the allocated library space until mid-February.

One student gathered the books and handed them over to an assistant of the Chief. There was slight confusion about the location of the pilot books. The consensus was that the JSS could be used as a temporary library until a more permanent location was identified, but the team hadn't communicated to the subchief specifically about which school the pilot books should be sent to. Professor Krueger delivered the pilot books to the JSS and the headmaster delegated a teacher to be the point person for collecting pilot feedback.

The team hoped that pilot feedback would help in selecting an initial collection for the library and be useful for any future library initiatives in Dwenase. Ten questions about the pilot books were devised and sent to the JSS teacher via Whatsapp and email to help guide the collection of feedback.



Figure 5. The Whatsapp logo. Whatsapp was the primary form of communication with locals in Dwenase.¹⁴

Figure 6 illustrates the questions that were sent to the JSS teacher.

Pilot Feedback Questions	
1.	Describe the children's initial reactions to the books, how did they interact with them?
2.	How were they introduced to the books (guided reading, independent reading, etc.)?
3.	How many books did you receive/how many books are at the library?
4.	Have the assessment cards been filled out?
5.	Who is primarily using the books and what age range are they in?
6.	Do you notice any books that are very popular?
7.	Are there any other interesting trends you have noticed?
8.	How much time will a person spend with each book?
9.	How long is the library open?
10.	Does the teacher take books from the library to each class?

Figure 6. Pilot feedback questions that were sent to a teacher at the JSS.



Figure 7. Students at the JSS with the books from the pilot study.

The JSS had agreed to set up a few reading sessions to get feedback about the usage of the books. We eventually received a picture of the JSS students with the pilot books but did not receive any feedback from both the assessments placed in the back of the books, as well as the questions. Figure 7 displays the image of the school children with the pilot books that was sent to our team by a JSS teacher.

One of the students at the global project center was able to obtain the books from the JSS for a reading session and sent us images taken during the session. Figures 8 and 9 depict the images sent to the team of the children reading the books.



Figure 8. Children from the primary school reading the books from the pilot study. This image was sent to the team via a student at the Global Project Center.



Figure 9. Children from the primary school reading the books from the pilot study. This image was sent to the team via a student at the Global Project Center.

Revising the Collection Policy for Book Drive Distribution

Through informal communication with the Dwenase Library Committee, our team learned that the reading level of the books was too difficult for the children. However, it was later understood that this feedback was not a critique of our pilot books, but of the books that were already in their collection, as described in the context section.

Despite efforts to gather data about the types of books Dwenase children would enjoy learning from, our attempts to conduct a pilot study did not occur as planned. Getting the pilot books to a central location and having someone in charge of collecting feedback proved to be difficult. The team had to move forward with developing a “collection policy” of what would most likely be sufficient for the Dwenase children based on background research, as well as conversations with the Chief and others. We knew that they did not have many books in general and that the younger children could use additional opportunities to learn the English language.

In many informal interviews, the Dwenase Library Committee also expressed that they wanted books that were interactive. The committee described books such as “I Spy books” or books with pop up features. This aspect was added to the criteria.

The initial reading level was set to include books that ranged from K to 5th grade. The team modified the existing collection policy to include reading levels that reflected the Development Reading Assessment (DRA) and Lexile Reading Levels for students K-3rd grade.¹⁵ The Lexile Reading Level Chart was not used to categorize the books but was solely used to seek out how to describe the books we were looking for. A simplified version of the collection policy is presented in figure 10.

Reading level was categorized into two levels, as it was very difficult to quantify reading levels between cultures. The two categories allowed the team to present material to a variety of students.

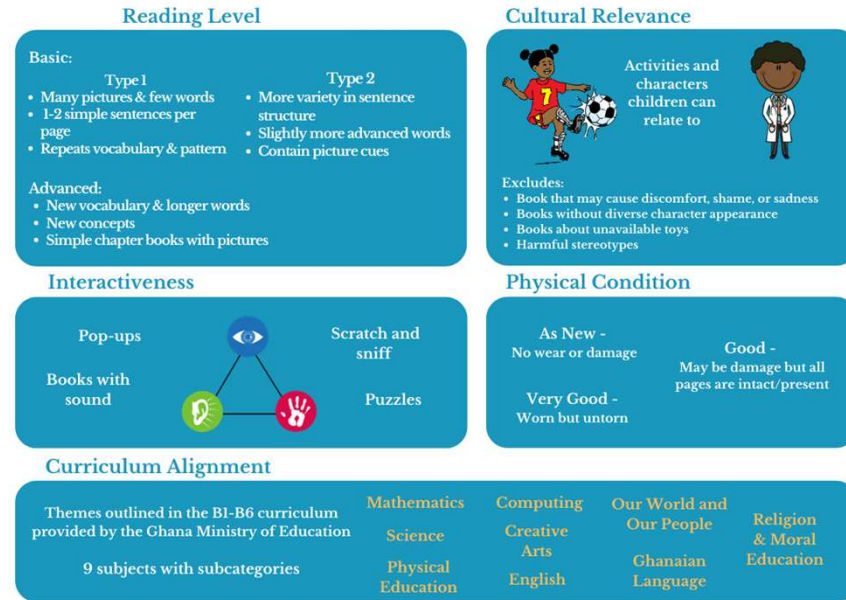


Figure 10. An abbreviated version of the final collection policy.

Interactive books were chosen to provide children with different learning styles (spatial, auditory-musical, linguistic, kinesthetic), an opportunity to engage with and learn from varying material.¹⁶

Cultural relevance was considered to help the readers feel comfortable. To ensure that the members of the community felt engaged and comfortable, we outlined a guideline to keep the books culturally relatable.

An example of both an appropriate and inappropriate book is provided in the following section, denoted as Figure 14.

Physical condition of the books was categorized following the terms proposed in 1949 by AB Bookman's Weekly.¹⁷ The team decided to included books that were deemed ‘Good’ and above.

Curriculum relevance aligned with books that highlighted the themes outlined in the B1-B6 curriculum provided by the Ghana Ministry of Education.¹⁸ The team wanted books that contained themes that correspond to the curriculum to help the children further understand these concepts.

Communicating the Collection Policy to Donors and Collecting Donated Books

To establish a larger collection of books, the team decided to run a donation drive. The revised collection policy was converted into a flyer for distribution to raise awareness for the drive, as displayed in Figure 11. There is a simple message about the purpose of the project, the desired types of books, and the location of the drive clearly listed on the flyer.

Three book drives were organized. The main book drive occurred in the WPI Campus Center and involved the efforts of the WPI community, with an emphasis on faculty and staff as students were less likely to have access to children's books and materials. Two satellite drives were arranged at organizations with close ties to WPI: Massachusetts Academy of Math & Science, WPI's accelerated high school, and Girls Inc. of Worcester, a non-profit organization that equips girls with the skills to navigate socio-economic barriers to grow into independent individuals.¹⁹ Each drive maintained a similar set up. A collection bin was present with both sides of the flyer printed separately and attached to the sides of the bin; this was

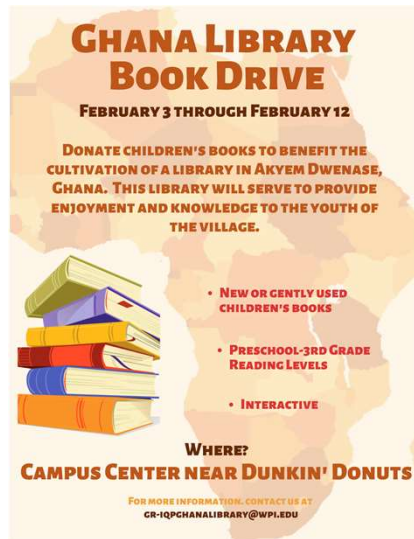


Figure 11. The donation drive flyer for WPI's Campus Center.

where donors could place their books as shown in Figure 12. Digital copies of the flyer were distributed to WPI staff and faculty through WPI's 'Potpourri' email list, as well as to the facilitators of the community drives via email.²⁰ A large poster was printed and hung at the WPI Campus Center beside the collection bin to guide donors.

We also explored local charitable organizations. Our team member Nick contacted a member of the Worcester branch of the Salvation Army. Because there would not

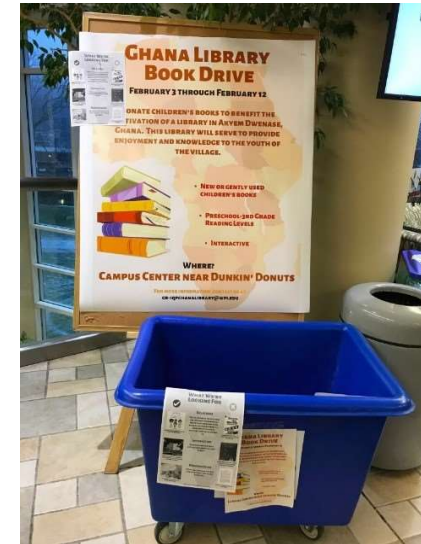


Figure 12. The donation drive setup for WPI's Campus Center.

be enough hands at the Salvation Army to sort the books, a time slot was allotted for us to hand sort the books and educational materials from their reserves at the Worcester warehouse. We spent a day sorting material in shifts from the generalized book collection.

There were also plans to contact Worcester public libraries, however, once a collection was established, it was not needed.



Figure 13. A bird's eye view of the collection bin in the WPI Campus Center during the donation drive.

A two-layer sorting mechanism was devised for the collection drives. To minimize the collection of books that did not fit the collection policy, we designed an easy to read collection policy for the flyer. A typical collection in the donation bin can be viewed in figure 13.

Three of the major criteria categories were included in the flyer collection policy, as represented in Figure 14. Each category contained a simple description to provide clarity. To help visualize the concepts, examples of books that fit, and didn't fit the criteria were included with simple captions to explain why.



Figure 14. The back half of the flyer that contained an abbreviated collection policy.

Hand Sorting Books from the Drive

The second layer of the sorting mechanism took place after the drives ensued. Our team hand sorted each book using a process that is detailed in the process flow diagram in Figure 15. The most important aspects were considered “primary.”

If the books did not fit the primary qualifications, they were placed into the ‘No’ collection. If they fit the qualifications, more specific secondary and tertiary aspects were considered. The succession of these factors is shown with increasingly darker shades of blue. Some of the blocks in the flow diagram stemmed from our discussions when books were not a perfect fit to the criteria. For example, if the books were not culturally relevant, they were not always discarded.

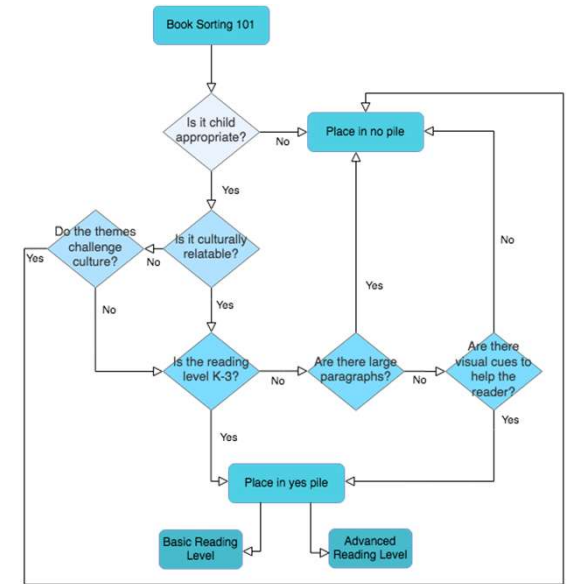


Figure 15. A process flow chart to illustrate the sorting process for donated books.

We examined why the book was not relevant. This led us to consider challenges to traditions. If books presented culture in negative ways, they were discarded. Some examples of things the team looked for included books that portrayed holidays or traditions that do not exist in Dwenase culture. It is important to stress that each book was highly unique, and this layer of the

sorting mechanism is a rough estimate of the approach taken by the team when deciding which materials were relevant.

After the books were sorting into 'Yes' and 'No' piles, they were categorized into **basic and advanced reading levels**.

Book Drive Results

The results of the three drives, as well as the Salvation Army collection, are summarized in figure 16. The books under 'STEM Education Center' were kindly donated to the team by Sarah O'Neil. The combination of the donation drives as well as other sources resulted in **1,168 total books for the initial collection**.



Figure 16. A summary of the result from the three drives as well as other donations.

Sending the Books to Ghana

Following the initial collection, steps were taken to economically transport the books to Ghana. The 1,168 total books were packaged in 13 cardboard boxes of varying sizes. The books were placed in cardboard boxes and a label was attached with the name and contact information for a Ghanaian connection who had direct ties to the village. Chief Kwabena arranged for him to pick up the books and transport them to Dwenase. The approximate volume of these 13 boxes was 28 cubic feet.

To ship these books, volume was the most important figure in calculating the cost of the shipment. There are limited numbers of shipping containers on each cargo ship that have a set volume. The weight of the collection did not hold much importance to our team, as the limit was far beyond the size of the collection. Our benefactor for this project used an economic method of shipping, in which the books were placed inside of a car. He had a friend that worked in the shipping industry who shipped cars to Ghana regularly and there was extra room left to fit smaller items, such as the boxes of books, inside one of the cars.

Figure 17 shows our team member Nick with the 13 boxes for size comparison.



Figure 17. Our team member Nick with the boxes for size comparison.

The collection of books was shipped on February 21st, 2020. The expected shipping time was approximately one month for the books to arrive in Accra. From this point, our contact person would take them to Dwenase. When planning the book drive, the team took into consideration

the amount of time required for shipments to arrive to their destination.

Connecting with the Worcester Ghanaian Community

Attempts were made to involve the Worcester Ghanaian community in the project, as Worcester is home to approximately 20,000 Ghanaians as well as many Ghanaian churches.²¹ Our team member Ron visited four of the Worcester Ghanaian churches to share our project with the church members in hopes that there would be interest in donating to the initial collection and perhaps beyond. Our team was unable to connect directly with the religious community and all communication was done through members of authority in the churches.

Our project and the details of our donation drives were shared with the church community through these authoritative figures at their own discretion. This inhibited the personal connection that could have been made between the church community and the team. Personal connections could have likely fostered a better relationship with these communities and led to increased participation in the drive. There were also no donation bins at these locations and no publicity for the drive. This left books to be physically collected by members of the church. The result was a lack of participation from these communities.

The same results were obtained from visiting Worcester Ghanaian restaurants. Flyers for the project were posted on bulletin boards and there were no accessible donation bins. Again there was a lack of

personal connection with the customers of the restaurants, which was a likely factor of the low participation. The lack of a donation bin could have also been confusing for the customers, who might not have understood where the drive was located. Another factor could be the frequency of customer visits to these restaurants. It is likely that even if the customers saw the flyer and engaged with it, they would not make a follow up visit to the restaurant to drop off books.

Lessons Learned and Recommendations for Future Projects

If other WPI teams were to approach a similar project (e.g. setting up a library in another rural community), it would be beneficial for them to **seek out more local partners with a similar sense of urgency for the co-development of deliverables.**

After being introduced to the first few local contacts, project teams can search for and work with other stakeholders whose interests align with the project. In the case of our project, it was mentioned that some retired teachers provided after-school tutoring for local students preparing for SSS entrance exams. Retired teachers in Dwenase, along with the youth organization, could have utilized an after-school book club to help us collect feedback about the pilot books. However, some students must walk very long distances to come to school in Dwenase and this, among other challenges, would have made an after-school book club difficult. But the point

remains that engaging with more Dwenase community members could lead to alternative opportunities to mutually develop and work on project deliverables outside of the traditional school system.

Chief Kwabena suggested that a recommendation for future projects like this one is to have a **single local person act as a lead surrogate in charge of collecting local feedback**. This could help simplify the communication process with local partners and reduce redundancy. The team spoke with different local stakeholders but often repeated the same questions. The communication process could be more streamlined and efficient by having a lead local collaborator in Dwenase.

To build long lasting relationships with local partners, **teams should have empathy for the infrastructure and understand differences or changes in priorities**. Even though the JSS teachers agreed to setup a reading sessions with the books, our team did not hear back from the teacher liaison regarding feedback about the sessions. We acknowledged that the JSS teachers had more pressing or important priorities when it came to their students' immediate education.

On-campus project teams could collaborate with travelling teams if their objectives are similarly aligned. Doing so could help solve communication issues between contacts on the ground and the on-campus team. Both teams would be able to assist each other with their own project goals, as they would have a mutual relationship. An example of a project similarly aligned to ours was the STEM education team at the Ghana project center. We might have been able to tailor our collection to include

materials to help aid their project, as they had been an excellent local point of contact for communication with our team.

With the limited time frame for this project, the team was unable to thoroughly involve the Worcester Ghanaian community in the project. Communication with the community occurred at local Ghanaian churches and restaurants as we identified that these would be areas for large gatherings.

An alternative to our approach would be to engage the Worcester Ghanaian community earlier during the brainstorming process. This can be done through facilitating a community forum where team members could ask the community what their ideas are for facilitating the project. An event like this would not only garner more interest from the community, it could also provide impetus for the formation of a Worcester Ghanaian Community for the library. By actively involving members of the community, as opposed to a select few, the community becomes a part of the project. It is not just something they can help with in a one-time effort, but a continual connection to the community in Dwenase.

In summary, we learned that the greatest factor that leads to success in fulfilling the needs of the community is clear and consistent communication. **Communication is the most important aspect** when it comes to anything that we would like to accomplish in Dwenase. Ample communication allows for a straightforward path and keeps everyone on the same page.

Another factor that leads to success is a “champion” that is more likely to execute what is asked of them well

and quickly. If the team needs a task, it is done efficiently, and the project can continue to move forward. This allows for more accomplishments in the project. Another way to do this is through integration of on-campus and travelling teams. They will be the “middleman” of sorts in communication efforts with the community, allowing for smoother navigation throughout the project.

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ENDNOTES

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