

Role of Empathy to Identify Unmet Needs in Indian Villages through Service Learning Program - A Case of the Unnat Bharat Abhiyan Program

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Abstract— Service learning in India is witnessing a large-scale adoption in higher education through the Unnat Bharat Abhiyan (UBA) program, a national-level service-learning program launched by India's Ministry of Education to promote community engagement and foster social responsibility among undergraduate students. The mission of UBA is to enable higher education institutions to partner with communities who live in rural India and engage in service-learning activities. The program advocates to build long-term engagement between academic institutions and nearby communities so that they could collaborate toward sustainable reciprocal partnerships. One of the goals of UBA is to establish linkages between academia and the community so that the knowledge created in the institutions could be targeted to solve complex societal problems. Higher education institutions that are part of this service-learning initiative were encouraged to do field studies through household surveys and informal interaction with the community members with a goal to identify unmet needs in the community. However, it was observed through prior research that the members of the community are only comfortable sharing their problems after faculty and students gain their trust. The paper presents a case study of a rural immersion experience that was introduced as part of the Unnat Bharat Abhiyan program at a private engineering institution in India. The 2-day rural immersion experience was designed to facilitate discussions among faculty and students with the community's various stakeholders, build trustworthy relationships, and empathize with their problems. The study employed a qualitative approach to investigate how students who were part of the rural immersion exercise described their experiences in the villages. Seven focus group discussions were conducted with 28 students who shared their highlights from visiting the villages and the process taken by them to identify unmet needs in the community. Thematic analysis was conducted to analyze the data and the results revealed the role of empathy in critically identifying challenges faced by the community members. The paper at the end presents the list of unmet needs identified by the students because of the rural immersion experience.

Keywords— Service Learning, Community Engagement, Engineering Education, Rural Development, Empathy

I. INTRODUCTION

India with a population more than 1.3 billion people has 70% of its population residing in rural areas. Estimates from the last census conducted in 2011 report around 80 million people living in more than 600,000 villages across India [1]. India is celebrating its 75th year of Independence in 2022 and has witnessed significant development in that period. However, most of this development was focused on the promotion of rapid urbanization which is evident with the increase in urban population from 17.92% to 35% between 1960 – 2017 . Most of the urban migration was caused due to lack of access to basic amenities, education and healthcare services, and employment opportunities coupled with growing opportunities in urban cities [2]. With 70% of its population living in rural India, it is imperative for India to rethink its strategy for development and growth through the promotion of sustainable development of rural India. Reduced dependency on urban India and industrialization for economic growth will also help India reduce its overall percentage of carbon emissions emitted thereby reducing the possibilities for disasters caused due to climate change.

The Unnat Bharat Abhiyan (UBA) program is a national level service learning initiative, which was launched by the Indian Ministry of Education in 2014 to encourage higher education institutions to contribute and play a role in the transformation of rural India [3]. The program encouraged long-term partnerships between academic institutions and five nearby villages so the knowledge created in institutions can be strategically aligned to solve unmet needs in the nearby communities. They promoted HEIs to build strategic partnerships with a goal to contribute to the socio-economic development of nearby villages. Students who are part of the Unnat Bharat Abhiyan program get a chance to experience rural India, engage with the community members, and appreciate its contribution the development and economy of the country. The Unnat Bharat Abhiyan program promotes the fostering of reciprocal partnerships with the community members based on elements trust and mutual respect.

While higher education institutions implement the Unnat Bharat Abhiyan program, it is important for the faculty and

students to visit the communities and interact with them to experience their lifestyles. Students should be provided multiple opportunities to engage with the community members to understand and get to know with their most pressing challenges. This paper investigates students' experience with community members as part of a rural immersion experience taken up by a private engineering-focused institution in India as part of their Unnat Bharat Abhiyan program. We conducted a qualitative case-study to understand students experience with the community members and the role of the rural immersion experience in identifying unmet needs in the partner communities. Focus group discussions were conducted with students who participated in the rural immersion experience to investigate the process followed to identify unmet needs in the villages. Results from the study can be used by the other institutions who are intending to implement the Unnat Bharat Abhiyan program while they engage with nearby villages to identify unmet needs in the community..

II. LITERATURE REVIEW

A. Service Learning in Engineering

Service-learning is defined as a credit-bearing educational experience in which students participate in an organized service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of the course content, a broader appreciation of the discipline, and enhanced sense of civic responsibility [4]. The role of reflection is considered to be critical to service learning as it provides students with the opportunity to bridge service and learning [5]. Service-learning in the last few decades has been promoted as an approach for higher education institutions to enable meaningful community engagement. Service-learning has witnessed widespread adoption from multiple disciplines including medicine, law, social sciences, engineering etc. While the pedagogy was first widely implemented in medical education, the adoption in engineering education was reported since at the start of the 21st century. Two of the earliest service-learning initiatives in engineering include the Engineering Projects in Community Service (EPICS) at Purdue University and Engineers Without Borders. In the last two decades, several other service-learning programs have been in engineering institutions across the globe as it has been reported to help students achieve the various graduate attributes required by ABET [6]. India has also witnessed an increase in community engagement as many engineering institutions have started to adopt service-learning as a pedagogy in the last decade [7]

B. Integration of Service Learning in Engineering Education to contribute Rural Development of India

The genesis of conversations on the engineering and technology for rural development began at Indian Institute of Technology (IIT) Delhi in 1972 through informal discussions among enthusiastic under-graduate and post-graduate students along with some faculty. The informal group was later constituted as "Science for People" that conducted multiple meetings at Indian National Science Academy to explore the role of engineering towards societal development. Two years later, the theme for the Indian National Science Government was "Science for Rural Development" where faculty from IIT Delhi conceptualized an idea to establish an in-formal Rural

Technology cell. The rural development cell was upgraded to a full-fledged Center for Rural Development and Technology with a goal to use science and technology to solve grassroot level problems in rural India. The Rural Technology Action Group (RuTAG) was established by IIT Delhi in 2009 to encourage collaborations and build partnerships with seven other IITs across the country [8].

In 2014, IIT Delhi under the leadership of the Ministry of Education launched the Unnat Bharat Abhiyan program (translated in English to "Holistic Development of India") to provide opportunities for faculty and students in higher education institutions to engage with people in rural India and contribute to their socio-economic development [9]. The UBA program encouraged higher education institutions to identify development challenges in rural partner communities and develop science and technology solutions to accelerate sustainable growth in the villages. The goal was the leverage the knowledge base of higher education institutions to identify and customize existing technologies or create new innovations that cater to the needs of people in rural India. IIT Delhi spearheaded the UBA program as the national coordinating institute along with the support of several regional coordinating institutions (RCIs). The RCI's were responsible to promote the UBA program among nearby institutions and encourage to join the program as participating institutions. To join the UBA program, each participating institution was expected to partner with 5 nearby villages and collaborate with relevant stakeholders to propose suitable science and technology solutions aimed to improve the social and economic well-being of the rural communities..

C. Participatory Approach to Service Learning for Implementation of Unnat Bharat Abhiyan Program

The vision of UBA to accelerate the development of rural India through engagement with higher education institutions is an ambitious effort as 65% of the population reside in rural India. It is therefore important for institutions to build sustainable and reciprocal partnerships that would last long-term. Participatory approach is therefore recommended to institutions during the implementation of the UBA program as a way to build trust and mutual respect with members in the partner villages [10]. Participatory approach to community engagement during the UBA program would also provide opportunities for faculty and students to engage with the community members and empathize the challenges that continue to impede their socio-economic development. The need to experience empathy could be considered critical during the identification of challenges and unmet needs in the partner villages as empathy is known to have the capacity to share feelings of concern and care towards others [11].

III. METHODOLOGY

A. Context of the Study

The goal of this study is to investigate the experience of students who were part of a rural immersion experience conducted as part of the UBA program at a private engineering institution in India. The institution has established a Center for Innovation and Social Transformation (CIST) to drive all community engagement programs activities, one of them being the UBA program. CIST had conducted 1-week Ideathon on Rural Development to encourage students to think innovatively and come up with ideas that could boost socio-economic development of our partner villages. The Ideathon was divided into two phases: Phase 1 – Rural immersion and

appreciation, and Phase 2 – Problem exploration and ideation. In the first phase, students visited our partner villages and interacted with different members of the community. Students when arrived in the village were welcomed by the village leaders such as sarpanch and panchayat secretary (village heads) followed by a tour of the village by gram nayak's who were our local community ambassadors. Students spent two days in the village where they interacted with elderly people, women, farmers and farm-labours, youth, children, skilled professionals, and entrepreneurs. The goal of the visits was to get immersed in the partner villages and learn about the realities of rural India. After the village visits, students were encouraged to reflect on their experiences of interact with different stakeholders and explore opportunities that have the potential to accelerate their socio-economic development. This study aims to investigate the experience of students during the rural immersion experience and understand how they identified unmet needs in the community..

B. Research Questions.

The study aims to investigate and analyse the following research questions:

- How did students describe their experience with the community members as part of the rural immersion experience?
- What was the role of empathy in the process of identifying unmet needs in the community?

C. Methodology, Data Collection and Analysis

A qualitative case-study approach was employed to design the research study as the goal was to understand students' experiences during their visits to the villages [12]. The case in the study was the rural immersion experience as the goal was to examine the experiences of students during the visits to the villages. We intended to observe how the rural immersion experiences influenced students' approach and decision-making while identifying unmet needs in the community. The unit of analysis are the individual experiences of students who participated in the Ideathon and were part of the rural immersion experiences.

Qualitative data was collected through focus group discussions with students who visited the villages as part of the program. Seven focus group discussions were conducted with four students in each group. Students were selected for the study based on convenience sampling and the sample consisted of 20% of the overall number of students who participated in the Ideathon. Participants for the focus group discussion were selected through convenience sampling as the Ideathon was conducted as a co-curricular activity and only a few students attended the program and showed interest to be part of the research study. The gender representation of students in the focus groups were 55% male and 45% female. All the students were pursuing their 2nd year or 3rd year of under graduation in engineering. Student participants belonged to multiple engineering majors such as electrical, mechanical, civil, and computer science. All the data was audio recorded and transcribed into text, which was later analysed using thematic analysis. A thematic analysis approach was used to analyse data as it would allow us to summarize and present different aspects of students' experiences in the villages through various themes [13]. The subsequent section presents the themes emerged from the data

analysis along with relevant quotes from students in the focus group discussions.

IV. RESULTS

There were four themes that emerged from the thematic analysis of data collected through the focus group discussions. The themes are presented below along with the relevant quotes from the semi-structured interviews.

A. Theme 1 – Experiencing rural India villages in its true essence helped students develop a sense of appreciation and gratitude towards community members

During the visit to the villages, the students interacted with various stakeholders present in the village. Students in the focus group discussed about the sense of appreciation they developed for people who lived in the partner villages as they were welcoming to the students who interacted with them. One student mentioned: *"I was really happy because they are interacting with us like a family member, and they shared with us their problems like we were their child. I appreciated that a lot about the culture in rural communities. It increased my motivation to solve some of the problems shared by the women".* Students through the interaction with different community members learnt about the social realities, culture, and traditions of the villages. As farming is the predominant livelihood for most individuals in the villages, students reflected on the contribution of the farmers for the social and economic development of urban India: *"We spent almost 4 hours interacting with few farmers and they showed us their farm where they cultivate their crops and explained to us the entire process involved in farming. I did not know about the amount of time and effort required to engage in farming and provide us with supply of food. The experience increased my respect for all the farmers who work very hard in our country".*

B. Theme 2 - Students problem-solving mindset limited their opportunity to build a bond with the community members

During the focus group discussions, we observed that many students went to the village with a problem-solving mindset which influenced students' conversations with the various community members. Students reported their engagement with different community members where they immediately started to ask them about the challenges they faced in their everyday realities and livelihoods. One student mentioned – *"firstly we went to the farms and asked the farmers what type of difficulties they are facing. During the interaction, we got to know that they are facing many health issues such as body and knee pains as they're spending lot of time bending and cutting some vegetables on the ground".* We then decided to come up with a solution to solve this problem and help the farmers". While some of community members openly shared about their problems, there were also other groups of community members who refused to interact with the students and share their challenges. This could be attributed to the reality that the village members never met the students before and would therefore be hesitant to share their problems with strangers who they do not trust. Students problem-solving mindset was therefore a limitation while they interacted with some community members, as they could have got more information from them if they first spent time to get to know each other.

C. Theme 3 - Village visits allowed students to experience the problems encountered by the community members in the real context

Students who were able to interact with different villages members shared that the visits to the villages helped them to experience the problem faced in the real context. Some students reported to have experienced the problem themselves: *"We also plucked the weeds around the field with the farm labor. We started facing some pain in the arm and knees in just ten minutes of doing that work, so we could understand how painful their work was"*. Other students mentioned that the experience of village visits gave them the opportunity to better understand the problem as they were able to interact with the end users and ask additional questions accordingly. For example, one student said *"When I met a farmer and started talking to them, we have observed that the crops at the borders of the farm were not healthy as crops in the middle. We first thought it was some issue with the soil but when we asked the farmer, he told us that the crops in the borders are often destroyed by animals such as pigs, wild boars etc. Being present at the farm physically therefore helped us better understand the problem"*. Few students reported different type of experiences where they developed concern for the farmers as they broke down in front of them while sharing their problems: *"He took us all to his main field and showed us the seeds he is using for farming. He showed us the crops already cultivated in his farm to highlight different in the quality of crops because of inconsistency in quality of seeds. The farmers buy seeds from the nearby markets but cannot find out the quality before cultivation. Due to this, many of them are facing issues and the farmer talking to us started crying because they feel helpless even after putting a lot of work. Sometimes half of their crops are not good due to bad quality seeds which they incur significant financial losses"*.

D. Theme 4 - Change in students' mindset about role of engineers towards the betterment of society

The last theme observed during the student focus group discussions was a change in mindset among some of them on their role in the society. This was an important theme as reflections included as part of service-learning experiences allow students are expected to bridge service and learning. One student reflected on their role in the society and said: *"Before the village visits, I was not thinking about all those things [community engagement and development]. I had a goal to get a good job and settle in my life. But after the village visits, it gave me an opportunity to think about others, to think about the problems of the villages and how can I use the learning from the college to solve them"*. Another student reiterated a similar reflection: *"During the Ideathon, I realized the real meaning of engineering. It is to be able to solve the problems of others"*. It was therefore observed that there was a transformation in the mindset of few students on the role of engineering in the society, which can be attributed to the concern and care they reported to develop for community members during the village visits.

V. DISCUSSION

A. Role of Empathy in Identifying Unmet Needs in the Villages

Empathy represents a nuanced and sensitive understanding of other's internal state and often described as an orientation where an individual is able to imagine how another person feels or thinks or imagine how one would feel and think in another's situation [14]. Empathy is considered to be a nuanced phenomenon which have affective and behavioural components, and the affective components can be automatically activated through certain experiences [15]. Batson identified 8 distinct but related phenomenon that have been referred to as empathy:

1. Knowing another person's internal state, including his or her thoughts and feelings.
2. Adopting the posture or matching the neural responses of an observed other.
3. Coming to feel as another person's feels.
4. Intuiting or projecting oneself into another's situation.
5. Imagining how another is thinking and feeling.
6. Imagining how one would think and feel in the other's place.
7. Feeling distress at witnessing another person's suffering.
8. Feeling for another person is suffering

Batson separated these different phenomena into two distinct groups: group 1 where one comes to develop empathic understanding of others and group 2 where one will act based on that understanding. Phenomenon 1 helps an individual build empathic understanding while phenomenon 2-6 represent the way in which empathic understanding is developed. Finally, phenomenon 7 and 8 help explain why a certain individual would act based on their empathic understanding.

Students in the focus group discussions reported their experiences of feel a range of emotions when they visited the partner villages as part of the Unnat Bharat Abhiyan program. The village visits allowed the students to interact with the community members and experience their problems in the real-world context. Through the community interaction, students were able to experience phenomenon 1, as they were able to know about the thoughts and feelings of the people they met. However, some students mentioned in the interviews that the rural immersion experiences enabled them to feel the pain experienced by community members, which can be considered as phenomenon 3 in the list provided by Babson. In theme 3, students reported their experience of feeling distressed by looking at the suffering of others. All these feelings of empathy experienced by students would have only been possible through the visit to the partner villages and interaction with various community members. Direct observation of end users is considered as an important technique that could be utilized by students to build empathic understanding [16]. Students submitted their problem statements after the end of the rural immersion experiences, and we noticed a range of problems identified by them. However, not all the students had identified unmet needs in the community as a good number of students reported problem statements that they believed were important to solve. We believe only those students who were able to build an

empathetic understanding and connection with the community members identified grass root problems in the partner villages that were not being solved by anyone else. Empathic concern (phenomenon 7 and 8) could be considered to be critical to students' commitment to engage in community-oriented projects and to view them beyond just "projects" and as an opportunity to facilitate socio-economic development and as a result impact change. Table 1 list the different unmet needs identified by students in the partner villages during the rural immersion experiences.

TABLE 1 – Unmet needs identified in the partner villages

S.No.	Unmet need identified
1	Low financial returns from sale of harvested crops due to multiple middlemen present in the supply chain
2	Unavailability of storage facilities to store perishable crops is forcing the farmers to sell crops in the market on the same day even though at a lower selling price.
3	Unable to cultivate crops such as sweet potato and corn that give best financial returns due to problems with pigs and wild boards who destroy the crops.
4	Inconsistent quality of seeds leading to reduction of farm produce
5	Low shelf-life of flowers after plucking is leading to almost 40% wastage prior to being sold
6	Unavailability of waste management systems which is causing hazardous living environment of community members
7	Drop in enrollment ratio in government primary school due to unavailability of kindergarten school in the village
8	Increase in long term physical injuries to farmers labors who cut and pick vegetables on the ground

VI. CONCLUSION

The study investigated the experiences of engineering students as part of a national service learning program where they visited partner villages to engage with the community members and identify unmet needs. Results from the study highlighted the role of empathy as the students identified problems in the community. Students reported the visit to the villages enabled them to feel the distress shared by the community members as they could witness the problems in real context. The study highlights the necessity of organizing rural immersion experiences for students who are part of the Unnat Bharat Abhiyan program, as an approach to be able to empathise with the members of the villages and identify those unmet needs that could accelerate their socio-economic development. Without the identification of unmet needs in the community, students and faculty can risk identifying problem statements that are not the need of the hour. Development of solutions for such problem statements will lead to no grassroots impact in the partner communities and would therefore result in wastage of time and resources of all the stakeholders involved in the project.

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