

MNIT Jaipur and University of Illinois Partnership Provides International Service-Learning Opportunities for LINC Students

By Valeri Werpetinski, Shikhank Sharma, and Rohit Goyal

An innovative educational partnership developed this spring semester between Malaviya National Institute of Technology Jaipur and the University of Illinois at Urbana-Champaign. Professor Rohit Goyal and Mr. Nikhil Sharma were integral to developing the partnership, which emerged as a result of faculty networking after a FICCI (Federation of Indian Chambers of Commerce and Industry) delegation visit to the University of Illinois. Learning in Community (LINC) is an interdisciplinary, inquiry-guided service-learning program in the College of Engineering at the University of Illinois. In LINC courses, undergraduate students with diverse majors provide meaningful community service through the conception, development, and implementation of projects in collaboration with community partners, non-profits, and non-governmental organizations. A range of both international and local community-based projects are tackled each semester, which address critical needs of importance to a variety of partners. Projects focus on topics such as social and environmental issues, engineering and technical problems, education, community health, sustainability, and international development.

With a strong network of NGO partners and active research projects focused on addressing public health issues in village communities across Rajasthan, MNIT Jaipur was strategically positioned as a valuable institutional partner in support of service-learning projects related to the problems of unsafe drinking water and improper sanitation practices prevalent in rural communities. Throughout the spring semester, LINC students had the opportunity to learn from and collaborate with MNIT Jaipur faculty, in particular Dr. A. B. Gupta and Dr. Urmila Brighu, as well as with NGO staff, including Dr. V.K. Chhabra of Healthcare Sansthan, Mr. Pankaj Mathur of UNICEF, and Mr. Saurabh Agnihotri of FINISH Society (Financial Inclusion Improves Sanitation and Health). Students learned about the dangers of drinking water with high fluoride concentrations, the detrimental health effects of fluorosis, and innovative research on defluoridation technologies. They also learned about problems associated with open defecation and challenges experienced with community adoption and usage of toilets as well as intervention strategies to support the Swachh Bharat Mission to improve the quality of life in rural areas.



Photo 1: Illinois and MNIT students pose for a photo after conducting fieldwork in Sikar District.

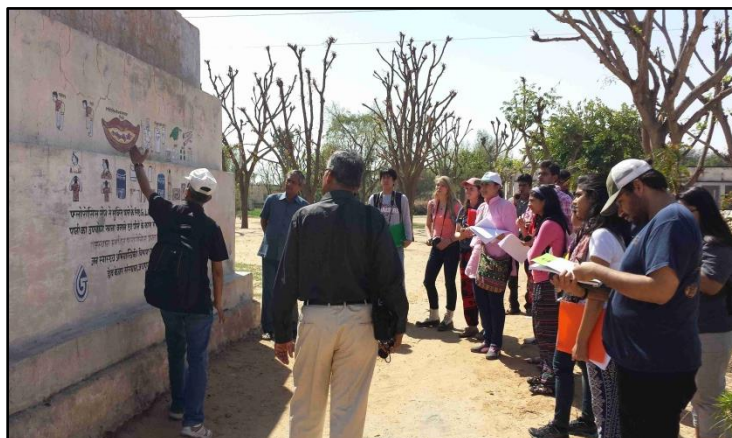


Photo 2: At Bhumachota School, Prof. A.B. Gupta explains the effects of fluoridation and how to detect it.

In addition to developing the MNIT Jaipur partnership with the University of Illinois, Professor Rohit Goyal played a key role in organizing a successful 12-day educational exchange and service-learning field study trip for a team of eight students and two staff members in the LINC program to travel to India during Spring Break. The students participated in a variety of educational, fieldwork, and cultural activities. While on campus, students learned more about MNIT Jaipur from a presentation by Dr. Awadhesh Bhardwaj and open discussion with Professor I.K. Bhat, Director, MNIT Jaipur. They also toured the Department of Chemical Engineering research facilities and learned about current research projects related to water quality and defluoridation from graduate students working with Dr. Suja George and Dr. Madhu Agarwal.



Photo 3: Illinois students receive a tour of the research facilities on the MNIT Jaipur campus.

Prof. A.B. Gupta and MNIT graduate students Dhiraj Mehta, Priyanka Sharma, Poonam Mondal, and Parimala Prasad and postdoctoral researcher Prakash Kumar Singh joined the LINC team to provide assistance with Hindi translation, cultural understanding, and data collection for the first project related to fluorosis and defluoridation. Before traveling to Sikar District, the team spent time with Dr. V. K. Chhabra and his staff at Healthcare Sansthan to learn more about the effects of fluorosis on communities, how to test fluoride levels in water, the mechanical

regeneration method for activated alumina used in defluoridation plants, and challenges experienced in their work to educate communities.

Once in Sikar District, the team visited Bhumachota School and conducted interviews with school staff and focus groups with children to gain insight about how their knowledge of fluorosis and ways to mitigate its negative effects are learned in school as well as to gain an understanding of attitudes impacting the use of defluoridation plants. Next, the team spent time in the village of Kanteva, where they made observations around a community defluoridation plant and conducted interviews with various demographic groups to develop an understanding of how knowledge, attitudes, and behaviors affect the utilization of the defluoridation plant in the village. Finally, the team visited an activated alumina regeneration plant, where Healthcare Sansthan technical staff demonstrated the process of activated alumina regeneration.



Photo 4: Healthcare Sansthan technical staff provide a demonstration of activated alumina regeneration.

The team returned to Jaipur to prepare for fieldwork activities for their second project related to health and sanitation. After learning about sanitation and hygiene programs and community intervention practices from Mr. Pankaj Mathur and his staff at the UNICEF office, the students revised a set of fieldwork protocols to gather information from three villages in Dungarpur District, where Mr. Saurabh Agnihotri and his staff at FINISH Society are working to enhance sanitation, decrease rates of open defecation, and mobilize communities to adopt and utilize leach pit toilet technology. Prof. Rohit Goyal and a second group of MNIT graduate students, Anjali Bansal, Sanju Meena, and Aakanksha Soni, joined the LINC team to collaborate on fieldwork activities in the villages of Venja, Rangila, and Bori. The team made observations, collected human interest stories, conducted focus groups with key demographics, and engaged community members in participatory rural appraisal activities. The fieldwork helped the team gain a deeper understanding of existing sanitation and hygiene practices, attitudes and perceptions about open defecation and toilets, challenges to successful implementation of toilets in different villages, and how intervention strategies are changing knowledge, attitudes, and behaviors related to open defecation and hygiene practices.



Photo 5: Illinois and MNIT students facilitate a focus group with village elders about sanitation.



Photo 6: Children share their ideas with the team during participatory rural appraisal activities.

Upon completion of the fieldwork in Dungarpur District, the team returned to Jaipur to work on synthesizing and interpreting data collected from the villages. In a final presentation to MNIT faculty and NGO partners, the students shared their preliminary findings and discussed next steps for developing project deliverables that could be useful for education initiatives and community intervention work related to defluoridation and health and sanitation. Following the presentation, students from both universities discussed the mutual benefits of working together and learning from field experiences in the rural village communities. The LINC team

celebrated their last night in Jaipur with MNIT faculty and students over a joyous dinner with entertainment featuring Rajasthani culture at Pride Amber Vatika.



Photo 7: Illinois and MNIT students visit Dungarpur Fort and other cultural sites in Rajasthan.



Photo 8: MNIT faculty and NGO partners provide feedback at the team's final presentation.

As an outcome of the project, the LINC team has accomplished the following: developed educational materials for Healthcare Sansthan, which can be used to train community members more effectively; developed posters about Fluorosis to address misconceptions noticed during field visits; prepared a detailed cost comparison of different activated alumina regeneration methods; created case studies of sanitation projects, which integrate theory and field data to provide insight into community and behavior change processes; generated new trigger activities and posters, which can be used by FINISH Society in community interventions to enhance sanitation; and composed human interest stories about fluorosis and sanitation issues

and the impact of the NGO partners' work in the local communities. Overall, the joint collaboration between MNIT Jaipur and the LINC program at Illinois has been very successful in achieving student learning outcomes and providing valuable contributions to NGO partners working in rural village communities in Rajasthan. It is proposed that continued collaborations are pursued through this promising new institutional partnership.