

SUSTAINABILITY & SOCIAL JUSTICE: MSU-TECHNION STUDY ABROAD PARTNERSHIP

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Eleven MSU graduate students, postdocs and faculty/staff members traveled to Israel in late October for 8 full days of exploration with 11 Israeli doctoral students and the Dean of the Faculty of Education in the Sciences and Technology at Technion of topics related to sustainability and social

justice in science education. It was also a powerful cultural exchange and established the foundation for continued work on issues of scholarly interest. What follows provides brief description of our collective experiences.

Friday-Saturday, 21-22 October: The MSU group made its way to the Technion campus and after meeting Tali and her spouse Avshalom Ginosar, walked down for a light dinner in the Ziv neighborhood, which is walking distance from campus. Because the next day was Shabbat, the first day in Israel began for the MSU group with an exploration of our host city of Haifa, guided by Dr. Itai Dabran, the director of community-based computer science project program at Technion and a native of the city. We walked down the stair paths from the Carmel neighborhoods to Hadar and downtown. Lunch was a family-style Israeli spread at Fattoush restaurant in the German Colony. This

day gave students a chance to get their initial bearings in the city where we would spend most of our time and illustrated how Haifa is a microcosm of the history, culture, and diversity of Israel and the site for many community-based projects related to peace and to sustainability.

Technion and MSU students met for the first time in person on Sunday. The day included lectures by faculty and students and provided an overview of the Israeli and U.S. education systems, and examples of research on programs related to our course theme of social justice and sustainability. Students also broke into small groups to share their individual research. Dr. Tali Tal presented an overview of the Israeli education system and the issues it faces. Dr. Shuly Kapon then presented "How equity emerges from studies of sensemaking and appropriation of epistemic practices in physics education." After lunch, students gathered in rotating roundtables to share their interests as a way to begin exploring potential collaborative work. I then presented "Diversity & Equity Issues in Teaching & Teacher Preparation in the US Context," and Dr. Yael Barel Ben-David talked about "The Citizen Science Lab: Connecting the community." We ended the day with a reflective group discussion.

Monday brought with it great anticipation, as it was our first field trip day. The first stop was at Alrowad for Science & Technology, a non-governmental organization in the village of Tamra in northern Israel established to promote STEM education in

the Arab community. We were hosted by directors Masood Ganaiem, Awnas Abunimer and their staff, who explained their efforts to build and deliver kits for hands-on activities and science demonstrations to more than 100 Arab schools around the country. They also have a gap-year program in which Arab high-school graduates serve as role models while being mentored to develop skills critical for achieving academic success in college.

That afternoon we stopped at Kibbutz Kabri in the Galilee, where we experienced teacher professional development at Acheret, the Arab Jewish Center for Physics Education Research. The Center is managed by Amutat Manor-Cabri, located just 5 miles from the border with Lebanon, enrolls 13-18 year-olds, and combines arts, science and humanities studies and is committed to engaging students in critical thinking and strengthening their commitment to justice, community, equality, and good citizenship. We later observed Arab students carrying out open inquiry projects in their physics

doctoral student, shared his expertise about bird migration as a vehicle bridging people, places and communities. We discussed the need for greater access to Hula by Arab youth and families. We then headed to Tel Hai College near Kibbutz Kfar Giladi to learn about Galilium, a system of youth-centered outreach programs in the North. We then visited Magi Moalem, 2017 Israel Science Teacher of the Year, at Danziger High School in Kiryat Shmona. She described the challenges of teaching in a Jewish community located far from highly resourced urban areas. From there we walked to a beautiful nearby park and heard from Dr. Ayelet Shavit (Tel Hai College and Technion) about "Town Square Academia," community-based groups with a mission of advancing science education in underserved communities. We discussed how the community-developed priorities and organized improvements make this site an educational and recreational gathering center.

Our final field trip day began Thursday with a visit



classes at nearby Sheikh Danun High School under the mentorship of Arab teachers who are themselves supported by Acheret.

We spent Tuesday at Technion for lectures and discussion on our course theme. Dr. Nirit Lavie Alon, Head of the National Education for Sustainability Teacher Center gave a talk on citizen science; Dr. Ayelet Baram Tsabari presented recent findings on science communication in ultraorthodox society; Dr. Dina Tsybulsky followed with a presentation on nature of science at the museums; and Dr. Judy Dori then talked about her work with Atidim members to narrow the socioeconomic gap through career choices. Dr. Areej Mawasi then presented work on designing learning environments, Dr. Rachel Pear of University of Haifa followed with a presentation on teaching evolution in a multicultural society, and Dr. Abeer Wattad of the Al-Qasemi Academic College of Education spoke about teacher education in Arab society. We ended the day with a discussion and brainstorming to identify group projects.

On Wednesday we traveled to Agamon Hula in the finger of northern Israel. There, Yaron Charka, JNF chief ornithologist and first-year Technion

to Bustan Thom. This environmental education center was established by the parents of a paratrooper who lost his life during the Second Lebanon War. Its programs bring diverse visitors to explore how they can be agents for peace and for the preservation of the world's resources. From there we traveled to Ramat HaNadiv, where we learned from Dr. Nirit Lavie Alon about community-centered sustainability work occurring there.

Our final day together was spent in intensive group work and presentations of collaborative work planned for the next six months for a group poster session at the 2023 International NARST Conference in Chicago. On Saturday, the MSU group toured Jerusalem together, punctuated by one final family-style meal in the Arab section of the city before the bus took travelers back to TLV.

Based upon conversations and evaluations, the course was life-changing, both professionally and personally, for all participants; we cannot thank enough funders from Israel and from MSU, for making the experience possible. We are already brainstorming a follow-up experience, possibly here at MSU!

