

# Waste for life



## Student learning through international development projects. Who pays and who benefits?

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Students are becoming increasingly interested in working, as part of their undergraduate experience, on projects that deal directly with a local or international community such as those hosted by *Engineering Projects in Community Service* (EPICS) and *Engineers Without Borders* (EWB). Through these organizations, services are often offered with suitable project selection, training and preparation for students. There are, however, many other ad hoc projects and placements offered to engineering students, with very little or no preparation. This can have serious consequences. There are all too many examples of engineering development projects, which have failed, due to inadequate and insufficient understanding on the part of the foreign development team, and in some circumstances without ever consulting the locals<sup>1</sup>. There are, however, precious few good resources to help students and faculty who wish to embark on a socially just and responsible endeavour<sup>2</sup>.

In 2007, I embarked on a six months experiment in Buenos Aires, Argentina with Eric Feinblatt, photographer and educator. The intention was to start a materials engineering project from scratch, to build up contacts, discover useful strategies, and watch out for pitfalls. The work we intended to do was based on similar development work I had been conducting in Africa. We wanted to work within the framework of Ursula Franklin who suggests we do economic, social and environmental bookkeeping before any project begins, by asking the question 'who benefits and who pays?' in all three domains.

We started our project, *Waste for life*, in Buenos Aires, with three people we did not know. We rented an apartment and took some Spanish classes. We wanted to see if the knowledge that I had, as a materials engineer, was of value to a group of local people called 'cartoneros' who collected recyclable garbage for a living. Some cartoneros have formed

into cooperatives and are increasingly organized<sup>3</sup>. We wondered whether knowledge of recycling and processing composite materials could help the groups move from being collectors to manufacturers of recycled products. Could the groups make simple composite materials, given adequate training and equipment? What would be the fiber and the plastic? Was this a good direction to move in or should we leave this to the government? Would it be better to work on a project suggested by local non-governmental organizations (NGOs)? There were many complex and interrelated questions. However, we knew that affiliating ourselves too soon with any group would influence the direction we moved in.

The first stage was to identify the local stakeholders government, community members, local business, NGOs, cooperatives and social movements and try to understand the limits to the knowledge base – how far should we go with stakeholder analysis and who should be involved? We had to frame the historical and political context of the current socio-economic climate to properly address the question of who benefits and who pays. But who should we believe? We had to conduct interviews and run workshops and group discussions in a sensitive, participatory way with local translators and we had to find out what equipment and knowledge were available locally. We had to explore how groups might fund the purchase of equipment, what products they might make and how they would market them. Finally, we had to find out what local organizations would be available to maintain sustainability of the work and evaluate ongoing success. And we always needed to keep in mind what success meant and to whom and whether we should not just have stayed at home.

We have now been back in North America for four months and are feeling the reverse culture shock.

We returned with the foundations of a system in place and we hope to involve student projects in future progress of the work. We decided to focus on composites made from plastic bags and cardboard pulp that my team of students at Queens developed and tested while we were in Argentina. The basic requirement is a hotpress or compression moulder, but these cost about \$80 000 or more. Darko Matovic at Queens offered to design a low cost version and a local industrial designer manufactured the prototype from these designs. We then arranged for the local technical research institute (INTI) to house and test it. We have located a local business to take on the task of manufacturing the hotpress to order and we have raised funds for a loan system to be offered through the micro-credit organization, 'Working World', for co-ops to fund a hotpress. Nine cooperatives have requested to learn the manufacturing process and they will be trained by INTI. Students at Rhode Island School of Design, US and the University of Buenos Aires are currently designing a product for the co-ops to make with the materials. We predict that sales of a simple product such as ceiling tiles or tables will multiply their income threefold.

If this feels like the trailer to a film – it is. We are in fact also in the process of developing a documentary and a book from the work conducted in Buenos Aires, which address these questions in detail.

### REFERENCES

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3. Aiello, R., and Grajales, F., *Social aspects of Solid Waste Management: The Experience of Argentina* World bank urban development website, World Bank Group (2001)