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iZindaba Zokudla (Conversations About Food) *Innovation in the Soweto Food System*

Angus Donald Campbell and Naudé Malan

iZindaba Zokudla (Conversations About Food): Innovation in the Soweto Food System[1] is an interdisciplinary research project initiated by the departments of Development Studies and Industrial Design at the University of Johannesburg (UJ), South Africa. The project aims to create a more sustainable food system in Johannesburg through urban agriculture. In 2013, iZindaba Zokudla conducted a series of public **multi-stakeholder engagement** (Dubbeling, de Zeeuw, and van Veenhuizen 2010) sessions to develop a strategic plan for urban agriculture in Soweto.[2] Appropriate technology was identified as a key requirement for sustainable food-systems change.

In response, an interdisciplinary **service-learning** (Jacoby 2015) course was developed in 2014 to support students and urban farmers in designing appropriate technology for marginalized and resource-poor urban farms. The course, Urban Agriculture and Food Systems Change, was offered to Bachelor of Technology Industrial Design students as a component of their Design Theory 4 and Product Design 4 modules and to Bachelor of Arts Honours Development Studies students in their Participation and Institutional Development module. Urban farmers located at three educational centers in Soweto were identified to take part in the design process. For each site, an interdisciplinary team was assembled that consisted of one industrial design student, between four and seven development studies students, and between three and five local farmers.

The service-learning course was offered to the students with the following learning objectives:

- identify opportunities for technological design through processes of personal immersion and engagement with community partners

- design appropriate technology for resource-poor contexts through collaborative design and social science methods
- critically evaluate the impact of relevant design processes and outcomes

Methodology

The 2014 service-learning course was developed as a direct result of the iZindaba Zokudla multi-stakeholder engagement sessions (see Figure 18.1) (Dubbeling, de Zeeuw, and van Veenhuizen 2010), which began in 2013. The sessions continued in 2014 in conjunction with the service-learning course, resulting in increased articulation and interaction in the complex collective-action project. Broad participation democratized opportunities for developing and refining urban-farm technology, contextualizing and socializing it in the process. Inherent in this methodology was an acknowledgment that technology is part of a local sociotechnical system (Latour 2005), which includes social capital among actors (Malan 2015a), local resources such as land, and city policies (Malan 2015b). This acknowledgment was important to encourage appropriate technological outcomes from the service-learning course (Smillie 2000).

The specific methods used within the service-learning course drew on participatory action research and human-centred design (Campbell 2013; Hussain, Sanders, and Seinert 2010). A step-by-step methodological guide was provided to the students but was sufficiently flexible to encourage improvisation. This methodological guide consisted of three distinct phases: (1) *immersion* in the lifeworld of the farmers (Brand and Campbell 2014; Theron, Wetmore, and Malan 2016); (2) active *engagement* with the farmers; and (3) continual *reflection* on the process (Malan and Campbell 2014).

18.1
iZindaba Zokudla multi-stakeholder engagement session at the UJ Soweto campus. Naudé Malan and Angus D. Campbell, iZindaba Zokudla, Johannesburg, South Africa, 2013.

Immersion was encouraged through a range of field visits and theoretical lectures. Engagement was facilitated through different design media, such as drawings, clay, cardboard models, and toys, to enable effective three-way communication between the designers, social scientists, and farmers. Reflection was undertaken using private online student blogs. In each team, the industrial design students were required to focus on the design of the technology, and the development studies students took up roles as team managers, process monitors, and asset and stakeholder mappers.

Learning and Technological Outcomes

Participatory methods enabled students to observe and engage with farmers on each of the sites in order to identify appropriate designs. The process resulted in three prototype technologies over a period of fourteen weeks of teaching time and biweekly field trips to farming sites, farmers' markets, local farming cooperatives, or iZindaba Zokudla multi-stakeholder engagement sessions. The prototypes served as the industrial design students' major project outcome for the semester. The students documented the design process in their blogs, which were integrated with their fieldwork and design development into a final mini-dissertation. The development studies students were required to write four assignments: a contextualization of the current food system in Soweto, their own private reflective blog, a report on their participatory process, and an evaluation of the outcomes of the project.

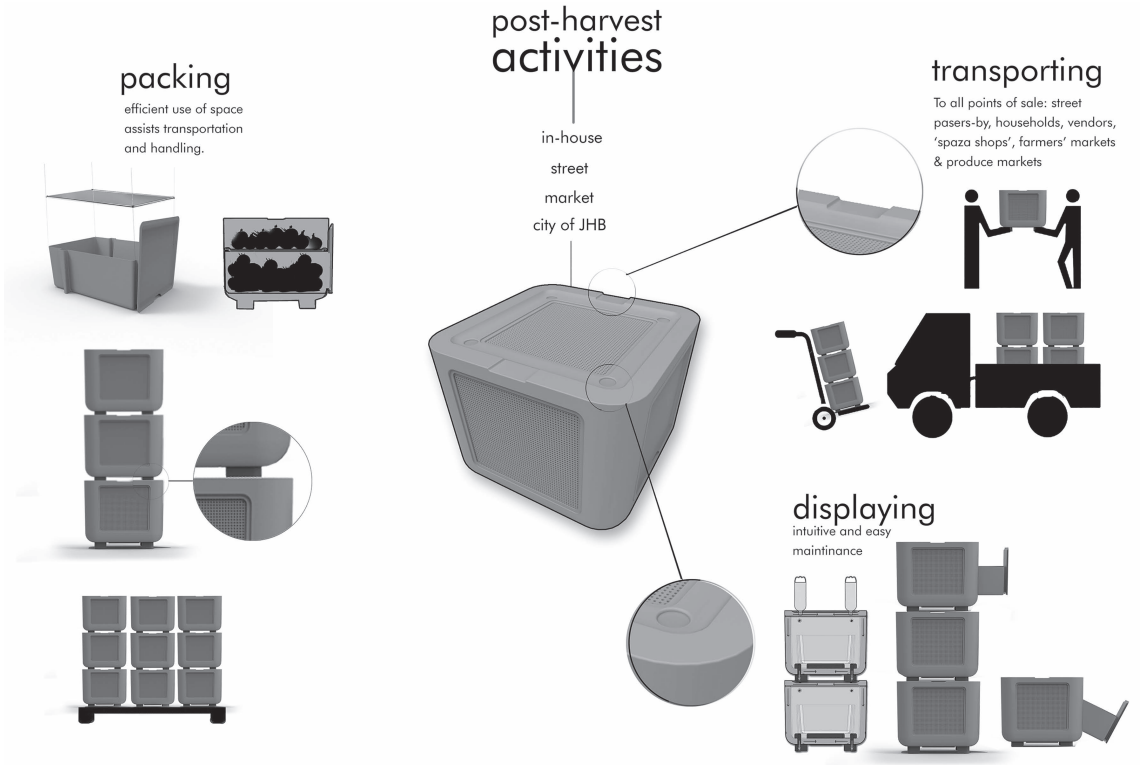
The three prototype technologies that were realized surpassed all expectations, resulting in the university's Technology Transfer Office provisionally patenting them after the course. They included a self-watering seedling growing system (see Figure 18.2), an off-grid food storage and cooling system (see Figures 18.3 and 18.4), and an off-grid water pump. The seedling growing system was exhibited internationally and included in the publication *Design to Feed the World* (Di Lucchio and Imbesi 2015, 144, 153–4). The off-grid food storage and cooling system has been further validated by an external engineering company, Resolution Circle, to be batch manufactured. This process still continues but is not open to participating farmers to test its appropriateness effectively. Therefore, the water pump was consciously made more accessible. It was documented in an open source manual,[3] which used readily available plumbing components for do-it-yourself manufacture by urban farmers. The manual was printed and disseminated to 150 urban farmers in two of the iZindaba Zokudla engagement sessions and has thus far been viewed seventy times and downloaded thirteen times (Jacobsz, Campbell, and Malan 2014).

The fourteen private student blogs documented the design research process and illustrated how design and societal considerations can be built into technology development. On analysis, it was clear that a methodological structure with defined disciplinary outputs succeeded in meeting the intended learning objectives of the course. Apart from limited interpersonal conflict, students and farmers collaborated amicably.

18.2
Seedling growing system concept discussion at Setlakalana Molepo Adult Education Centre, Jomari Budricks, Angus D. Campbell, and Naudé Malan, Take Root Seedling Growing System for iZindaba Zokudla, Johannesburg, South Africa, 2014.

18.3
Food-storage prototype evaluation with urban farmers from Siyazenzela. Natalia Tofas, Angus D. Campbell, and Naudé Malan, Umlimi Urban Food Storage Unit for iZindaba Zokudla, Johannesburg, South Africa, 2014.

The service-learning aspect of the course led to increased diversity within the student and farmer teams in terms of culture and social class. This was important to encourage appropriate and relevant knowledge outcomes in the postcolonial and postapartheid South African context (Mbembe 2015). Both student groups benefited from learning from each other through collaboration, although depending on team dynamics, some of the development studies students felt that the practical design of the physical technology overshadowed their written theoretical outputs. This conflict required coordination by the lecturers to help bridge the two disciplines.



18.4

The evaporative cooled food storage system accommodates the post-harvest activities of food packing, transportation, and display. Natalia Tofas, Angus D. Campbell, and Naudé Malan, Umlimi Urban Food Storage Unit for iZindaba Zokudla, Johannesburg, South Africa, 2014.

Real-world learning, with the associated complexity involved in the interactions between multiple actors, requires sufficient time. The service-learning course somewhat underestimated these time requirements. Even with these shortcomings, the course benefited both the urban farmers, who received more appropriate technology, and the students, who experienced real-world embedding of their own learning—resulting in highly appropriate knowledge outcomes for the next generation of South African citizens.[4]

Notes

1 For more information, see www.designsocietydevelopment.org/project/izindaba-zokudla/ and www.facebook.com/izindabazokudla/.

2 Soweto is a former apartheid nonwhite township on the outskirts of Johannesburg and currently hosts a UJ campus, where the engagement events took place.

3 The open source movement is one where intellectual property is freely shared for broad dissemination; in this case, the manual was licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

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