Experiential Learning Labs for Sustainable Development: A Case Study in Community Operational Research Education

OR65 University of Bath, UK
12-14 September, 2023

David E. Salinas-Navarro
Community Resilience and Sustainability Lab (CoRSEL)
Agenda

• Introduction
• Background
• Method
• Results
• Discussion
• Conclusions
Introduction

• This work examines *Experiential Learning Labs (ELLS)* in *Community Operational Research (Community OR) education* to promote sustainability-related learning outcomes in Higher Education.

• Addressing the Sustainable Development Goals (SDG’s) #2 and Principles for Responsible Management Education (PRME).

• The aim is to provide an *interactive, immersive, and learner-centered approach* through *community-based learning experiences* linked to real-world situations in cities and communities.
• Learning and Teaching **Community OR in Cities and Communities**.

• An **ELL** as a *social space for interaction* to undertake reflective and hands-on activities in specific contrived or real-world educational scenarios (Salinas-Navarro and Garay-Rondero, 2020).
Background

- Involving Kolb’s Experiential Learning Cycle, constructive alignment and authentic assessment
- With links to challenge based learning, service learning, and competency-based education
- Provide an interplay of cities and communities, as learning spaces, and in-classroom activities
- Develop learning outcomes in Community OR education.

Figure 1 Experiential Learning for COR Education
Adapted from Kolb (1984)
**Sustainability issues:**
- Inclusion and diversity
- Food security
- Health and wellbeing
- Waste generation and disposal
- Urban mobility
- Energy consumption
- Gas emissions

**Learning experiences:**
- Presence
- Remote
- Hybrid

**Pedagogical Approaches:**
- Experiential Learning
- Challenge-based Learning
- Service Learning

**Community Operational Research Interventions for:**
- Policy making
- Decision Making
- Problem Solving

**Value Delivery for:**
- Cities and Communities
- Students
- Academics
- University
Method

• **Defining the case**: Nanostore Food Supply in Metropolis of Latin America
• **Selecting the case**:
  – The Social Lab for Sustainable Logistics @ Mexico City & Bolivia (Rangel-Espinosa et al., 2020; Salinas-Navarro and Rodríguez Calvo, 2020)
  – Systems Dynamics and Logistics Design modules
• **Developing the learning experience**:
  – ABET learning outcomes (problem solving under realistic restrictions)
  – Studying local shops’ food supply in neighbourhoods to enhance local food security
• **Evaluating learning results**
  – Students’ opinions and learning outcomes’ achievement
• **Reporting findings** (disciplinary and learning experience)
Developing last-mile strategies by studying the complexity of interactions between suppliers, local shops, and communities in specific geographical areas through proximity logistics (using causal loop modelling, descriptive statistics and clustering analysis) to enhance product availability, accessibility and affordability.
Findings

• Discoveries are twofold:

  1. Nanostore supply
     a. Traditional food supply strategies to local shops are based on long-hauling vehicles with low frequency deliveries, which increase gas emissions and local in-store inventory levels. However, these provide cost-effective alternatives for suppliers
     b. Looking at the contextual characteristics of neighbourhoods, shopkeepers’ expectations, and consumers’ profiles to develop last-mile deliveries through distributed crossdocking alternatives
     c. Efficiently and effectively articulating supply and demand.

  2. Learning experience
     a. Students carry out experiential learning linked to relevant sustainability issues incorporating multidisciplinary knowledge
     b. Communities are seen as a first-hand and well-known opportunities for learning by experience
     c. Community OR is recognized as useful and practical.
Conclusions

• ELLs can grow **sustainability-related skills, engagement, motivation, and learning relevance** in Community OR education

• Valuable insights into the **key factors and challenges** associated with implementing ELLs and **highlights the potential** of this approach for other educational contexts in Higher Education

• The design and execution of learning experiences turns out **demanding and time consuming**

• **Further learning experiences** to exemplify the use of Community OR tools in practical community settings for learning outcome development.

