

Designing for Resilience: Collaborative Architecture Education for Climate Adaptation in Kaituna South Dunedin



Atelier South Summer School 2025 – Ōtepoti Dunedin

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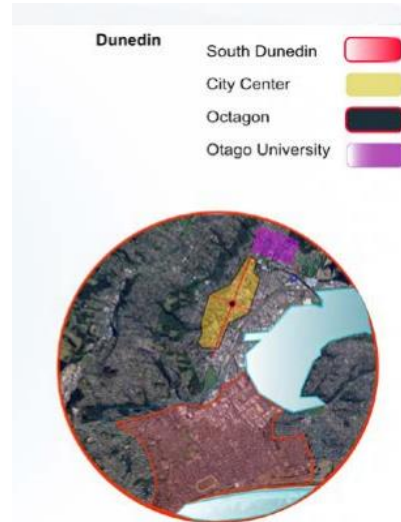
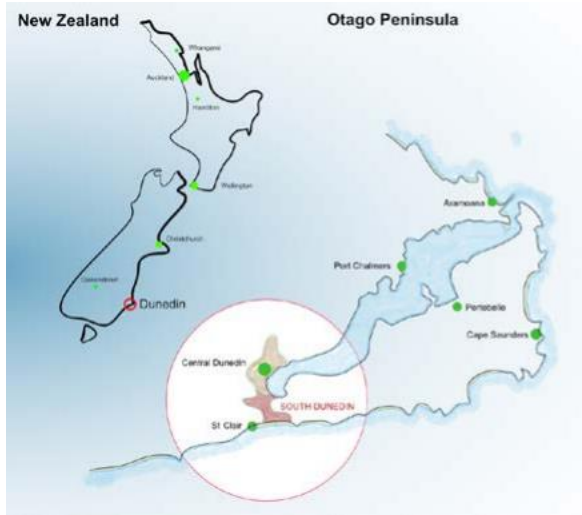
Educational Context: Atelier South

- A pan-institutional collaboration, initiated by **Irene Boles** (Ara) and **Tobias Danielmeier** (Hod – OP) in February 2024, with the goal of channelling research and innovative learning opportunities in Te Waipounamu (South Island of New Zealand)
- A 3-year research programme, focussing on **Ōtepoti Dunedin** urban regeneration through the lenses of climate adaptation, community resilience, alternative economies and more...

Educational Context: Climate Change and collaboration

- Climate change is a global, **interdisciplinary** challenge (Tonbol, 2024).
- Architectural education must evolve from individual creativity to **collaborative**, systems-based thinking (Rodic et al., 2013).
- **Atelier South** Summer School positions **architectural education** as an interdisciplinary, hands-on laboratory for real-world scenarios, in the climate adaptation and urban resilience context.

Geographical Context: Kaituna South Dunedin



Flooding has been an issue for over a decade



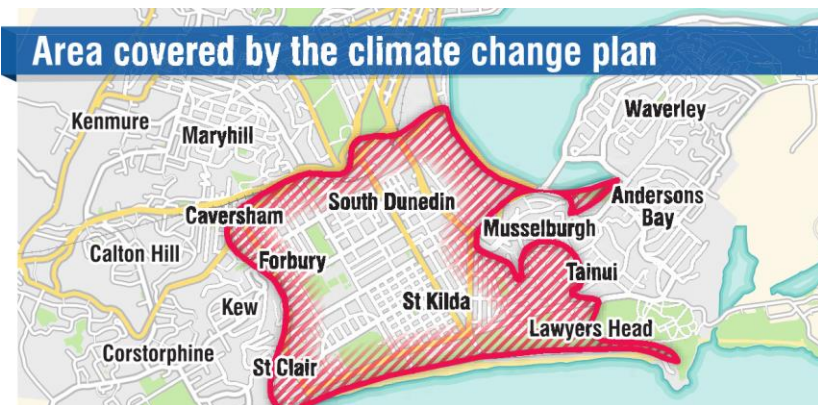
Hinake (Eel trapping) was an efficient way of hunting

- Otago, Te Waipounamu, South Island of Aotearoa New Zealand
- Early Maori settlement (1300)
- Wetland, used as Mahinga kai site
- Settled by Europeans in 1800 with land reclamation

Geographical Context: Kaituna South Dunedin



- Severe flooding (worst in 2015)
- Low-density, old housing stock, low socio-economic but very strong and active community (Dream South-D)



A testing ground for collaborative, interdisciplinary, design-led climate adaptation & urban regeneration

Project Objectives

- Foster **interdisciplinary** and **trans-scalar understanding** of climate impacts on urban areas and communities
- Embed indigenous environmental knowledge – Mātauranga Māori and Kaitiakitanga
- Develop student agency in climate adaptation
- Cultivate peer-to-peer, cross-institutional collaboration for long term benefits (students and staff)

(Korsager & Slotta, 2015)

Pedagogical Framework

- Three complementary frameworks:
- 1. Collaborative Learning (Smith & MacGregor, 1993)
- 2. Experiential Learning (Kolb, 1984)
- 3. Ethnographic & Transformative Pedagogy (Antonini et al., 2021)

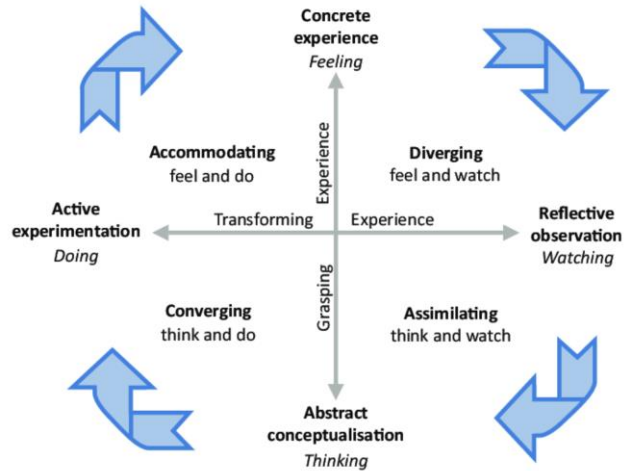
Collaborative Learning



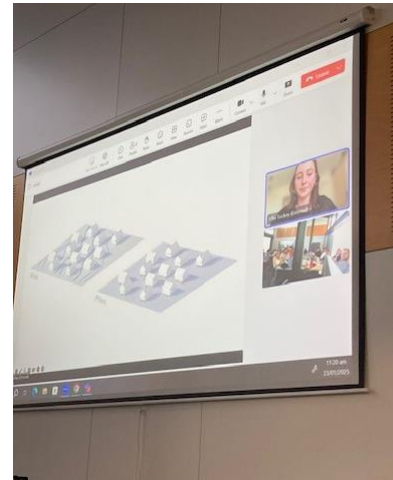
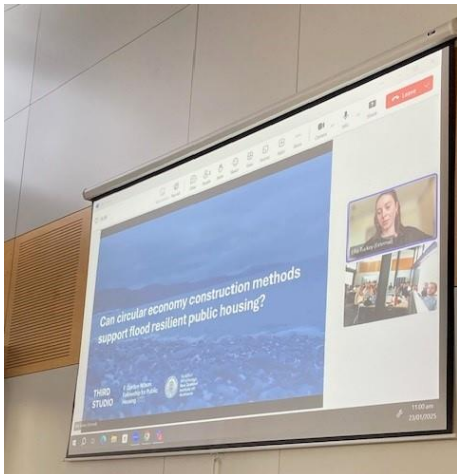
- Students worked in groups across institutions and disciplines
- Focus on knowledge co-creation and shared authorship
- Real-world scenarios and people

(Smith & MacGregor, 1993)

Experiential Learning



- Based on Kolb's (1984) experiential learning cycle
- Field immersion, hikoi, and stakeholder engagement
- Iterative process of action and (collective) reflection



Students developed embodied understanding of collaboration and meaningful professional relationships

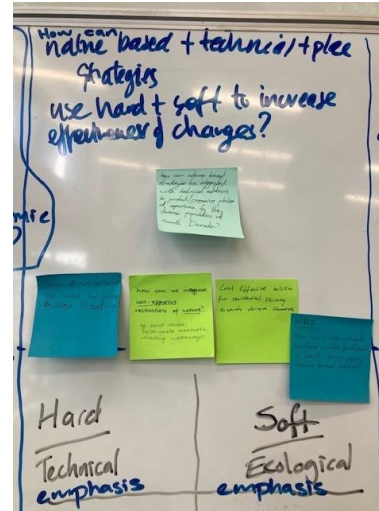
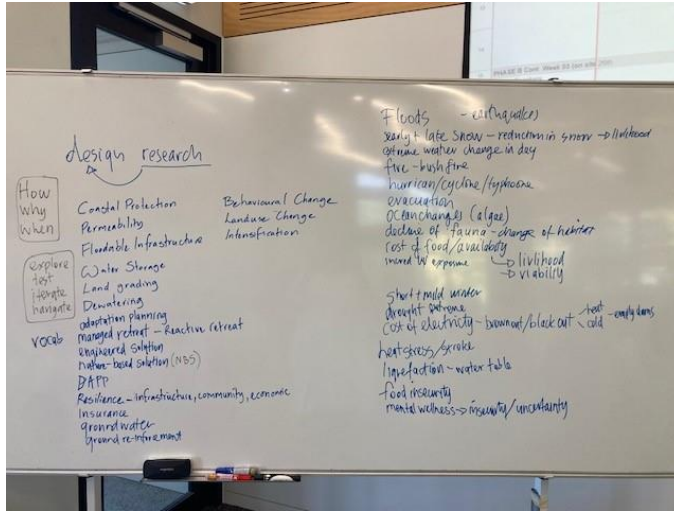
Ethnographic and Transformative Pedagogy



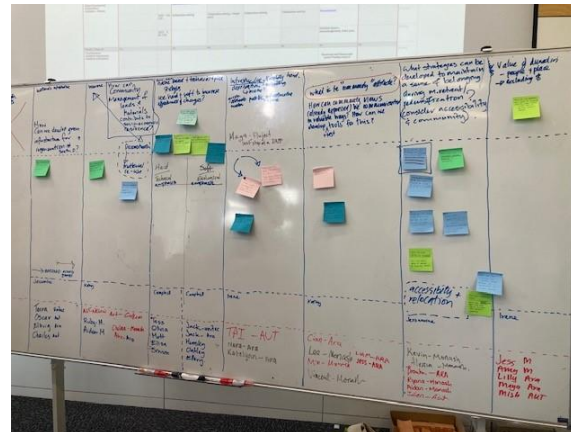
- Participatory mapping and informal interviews
- Design as listening and empathy (Antonini et al., 2021)
- Shift from object-making to relationship-building

Encouraged ethical, reflective co-design practice.

Studio Process



- All students brainstormed climate change and adaptation issues
- Research questions were formed
- Groups formed based on interests
- Groups designed methodologies to address the research questions



Collaboration as a method of inquiry

Studio Process

- All students brainstormed issues related to climate change and adaptation
- Draft research questions were formed based on those topics
- Students grouped based on their interest in the formalised research questions
- Groups designed appropriate methodologies to explore and address the research questions, through adaptive strategies at multiple scales:
 - Managed retreat
 - Blue-green infrastructure
 - Community resilience
 - Housing typologies
 - Nature-based solutions

Design Outcomes

Phase 1: Sand Storage for Flood Response – Ārai Wai



The first phase involves integrating large, modular above-ground sand pits within children's playgrounds and community fields. These pits will act as storage areas for sand that can fill sandbags during flooding emergencies. Families can gather in these public spaces and work collaboratively with children helping to fill sandbags and stored emergency kit and tool shed. This initiative fosters community spirit and ensures quick access to flood protection measure.

Figure 1.1 by Amy Priester

Phase 2: Community Emergency Drives- Takatō



The second phase introduces community emergency drives, which will be located in centralized, easily accessible public spaces. These units will store essential items such as water, flashlights, and hammers. This idea will operate on a 'lend-and-take' system. Residents can contribute supplies or access them when needed. By creating these emergency drives, the community can feel reassured knowing they have immediate access to vital resources during emergencies.

Figure 1.2 by Michael Tobia

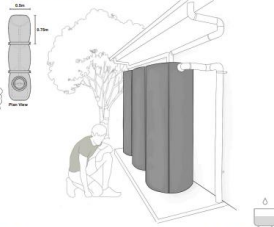
Phase 3: Leasable Emergency Equipment Hub – Whakamaru



The third phase focuses on providing key leasable emergency equipment for community use. Items such as dehumidifiers, heaters, backup generators, and water vacuums—critical during and after flooding—will be made available at public locations like community centers located on the corner of Bayview Road and King Edward Street. These resources ensure that residents have access to essential tools they might otherwise struggle to acquire, helping them navigate challenging situations with greater ease and security.

Figure 1.3 by Maya James

Phase 4: Living with Water – Tāheke



The fourth phase proposes an initiative to help manage water and make it a productive and positive resource. Using water tanks to manage filtered water and lower the water costs in households. Water catchment opportunities help protect the community from large severe flooding by managing personal water catchment.

Figure 1.4 by Lily Barbury

Fig. 11 . Diagrammatic South Dunedin Sectional Relationships. S. Basel

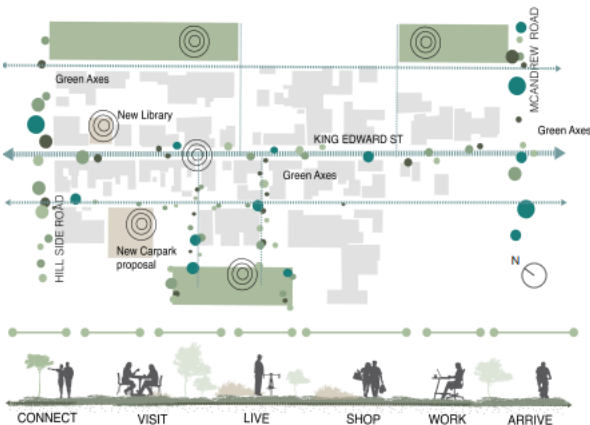


Fig.12. Retail Intervention Nodes & Plan. O. Wilton & E. Paul



- Community-Led Early Response Network
- Indigenous Adaptation Overlay (Mātauranga Māori)
- Land guardianship post-retreat to maintain bond with place (Kaitiakitanga)
- Nature-Based Solutions for climate adaptation

Shared premise: adaptation as collective practice.

Reflections and Learning



- Students reported transformation in ethical and ecological awareness
- Learning through practice, reflection, negotiation and co-creation dialogue
- Friendships = future professional partnerships



Supports Antonini et al.
(2021): pedagogy as
transformative, not technical.

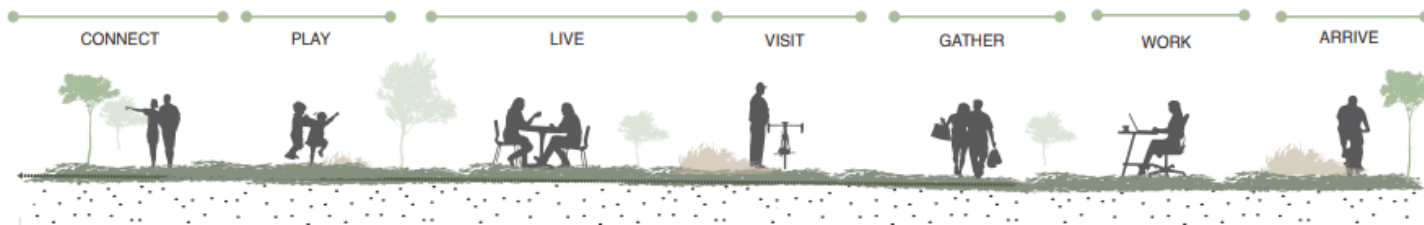
Significance for Education and Policy

- Context-based learning fosters civic and technical competence
- Schools as living laboratories for adaptation
- Dialogue with iwi, council, and community
- (Korsager & Slotta, 2015)

Broader Implications & Learning



- Education must reorient toward care and collaboration (Rodric et al., 2013)
- Interdisciplinary, place-based models bridge research and action (Tonbol, 2024)



Architecture as a
discipline of care.

Conclusions

- Collaborative, experiential, and ethical learning prepares architects for an age of uncertainty.
- Education as adaptation—and as advocacy.
- Ngā mihi nui — thank you.

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