PLAN 548I
Lecture 4:
Building Performance Evaluation and Post-Occupancy Evaluation
Lineage, Approaches, Uses and Benefits

Aims of this Lecture
- Basic introduction to concepts of POE and BPE
- Explain how field has developed and current emphasis
- How POEs are used in evaluation of housing and other contexts
- Prepare students to use more detailed materials to design a POE study for this course and to do future evaluations without necessarily having to hire a POE consultant
- Promote class discussion about POE approaches for research projects associated with this course
- To prepare students be astute clients of POE consultants

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1. Evolution of POEs
2. BPE: widening the discourse
3. Cases here and there
4. Three types of POEs
5. POE phases or steps
6. Benefits of POEs
7. Good and bad POEs
8. Research methods
9. Management of a POE
10. Products of POEs
11. When to use
12. Lessons
13. Training and what is next?

The Evolution of Post-Occupancy Evaluation 1
- **Late 1960s:** one-off case study evaluations of university dormitories
- **Mid-70’s:** first publications with term “POE” in title; AIA Journal, 1975
- **1970s and 1980s:** progressed to system-wide and cross-sectional evaluations
- **1980s:** POE activity in UK, Canada, New Zealand, Australia, and US:
  - public works projects
  - government buildings
  - airports
- **Result:** sizeable and significant POE studies
First POE Textbook

- Preiser, Rabinowitz & White (1988), Post-Occupancy Evaluation
- Companion volume, Building Evaluation, published 1989
  Preiser, 1989:
  - Case studies from around the world

The Evolution of Post-Occupancy Evaluation 2

- Early POEs focused on residential environments and housing for disenfranchised groups
- Led to systematic assessment of physical environments (how people were using them)
- Since targeted:
  - Hospitals
  - Prisons
  - Other public buildings
  - Commercial buildings
  - Offices

Preiser and Vischer, eds., 2005: 8

Recent US Government Initiatives

- 2001: National Academy of Sciences revisited topic of POE in symposium, dealing primarily with POE in US Government agencies

The early POE framework

Preiser, Rabinowitz and White, 1988

- 3 levels of effort, degrees of sophistication and data-gathering techniques, cost, staffing:
  - Indicative
  - Investigative
  - Diagnostic POEs

Building Performance Evaluation (BPE)

- Performance evaluation framework
- Systematically relates buildings and settings to users and their environmental needs
- Represents a conceptual, process-oriented approach
- Accommodates relational concepts
- Can be applied to any type of building or environment
- Framework can be transformed to permit phased handling of information concerning person-environment relationships

Preiser and Vischer, eds., 2005: 7

Evolution of POE towards BPE

- Emphasises holistic, process-oriented approach
- Takes into account:
  - Facilities
  - Forces that shape them
    - Organisational
    - Political
    - Economic
    - Social

Preiser and Vischer, eds., 2005: 8-9
Widening of framework: BPE

- Include a wider range of stakeholders and decision-makers who influence buildings
- POEs then relevant earlier in the design process
- Applied throughout building delivery and life cycle

DO NOT WAIT FOR BUILDING TO BE OCCUPIED:

- Early intervention helps avoid common mistakes caused by:
  - Insufficient information
  - Inadequate communication among building professionals at different stages

POE as a useful tool

- Applied in a variety of situations
- Sometimes results widely disseminated
- Other times uniquely available to the client
- Many problems found after occupancy: systemic

Elements of building performance

Preiser, A. et al., 1988

Cases
Goongawarra

The Politics of Neglect

Problems in Goongawarra

- Lack of access for young people: 77%
- Street lighting: 66%
- Pavement condition of main streets: 61%
- Lack of public telephones: 50%
- Curtailment of city traffic: 51%

Minto POE 1983

Life in Goongawarra

- Satisfaction: 79%
- Good things: 65%
- Communication: 35%
- Environment: 20%
- Services: 10%
- Privacy: 5%
- Safety: 3%

Housing Issues

- Living in Public Housing

Minto: Social Evolution of Medium-Density Public Housing in Sydney Northern
Vanda Sotiriou and Tony Dolenko
Back to the Theory

Types of post-occupancy evaluations

1. Indicative

- indication of major successes & failures
- lasts only a short time
- methods:
  - archives & documents
  - basic performance issues
  - walk-through
  - selected interviews
2. Investigative

- more time-consuming
- often a follow-up in a more detailed & reliable manner
- assessment of literature required
- more sophisticated data collection & analysis techniques
- 160-240 staff hours - plus administrative support

3. Diagnostic

- most rigorous
- multi-method strategy
- several months or years ($!!)
- recommendations long-term, not building-specific
- methodology:
  - involves many variables
  - examine correlation among physical, environmental & behavioural performance
  - can lead to improvements in guidelines and design criteria (such as programs or briefs)

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POE Phases or Steps

1. Planning: reconnaissance and feasibility, resource planning, research planning
2. Conducting: initiating on-site data collection process, monitoring and managing data collection procedures, analyzing data
3. Applying: reporting findings, recommending actions, reviewing outcomes

1. Planning Phase

- Reconnaissance/feasibility
  - establish realistic parameters
  - determine scope & cost of study
  - obtain contractual agreement
- Resource planning
  - organise resources
  - develop support & cooperation
- Research planning
  - develop research plan = credible & appropriate results
  - establish performance criteria
  - define methods/instruments
  - allocate responsibilities
  - develop quality control procedures

Phase 2: Conducting the POE

The main tasks in conducting the POE for the collection and analysis of data
2. Conducting Phase

- Initiate on-site data collection
  - prepare evaluation team
  - coordinate timing & location
- Monitor & manage data collection
  - analyse data
  - monitor to ensure reliable results
  - develop useful and insightful results

3. Applying Phase

- Report findings
  - report results suitable to client’s needs
  - provide clear accurate data
- Recommend actions
  - implement feedback/feedforward mechanisms
  - stimulate action
- Review
  - monitor life-cycle implications of recommendations

Short-term Benefits

- Identification of and solutions to problems
- Proactive facility management responsive to building user values
- Improved space utilisation and feedback on building performance
- Improved attitude of building occupants through active involvement in evaluation process
- Understanding performance implications of changes dictated by budget cuts
- Informed decision making and better understanding of consequences of design

Medium-term Benefits

- Built-in capability for facility adaptation to organizational change and growth over time, including recycling of facilities into new uses
- Significant cost savings in building process and throughout building life cycle
- Accountability for building performance by design professionals and owners

Long-term Benefits

- Long-term improvements in building performance
- Improvement of design databases, standards, criteria, and guidance literature
- Improved measurement of building performance through quantification

Preiser et al., 1988
Another Case

South Brisbane Bus Interchange

A 12-inch white cardboard arrow is often used pointing out small items when taking photos or photographs in the building.

- Record building conditions and occupant activities
- Re-examine building conditions later
- Collect behavioral and functional data

Photography is an inexpensive data collection tool that provides a number of benefits.
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What makes a good POE?
- appropriate objectives (targeted)
- appropriate scale/scope
- supported/understood by client body/users
- generates directly relevant information: value readily apparent
- ‘value for the money’
- findings presented in useful format
- builds on research & contributes to it
- is adopted and acted on (in our dreams...)
- becomes part of the corporate culture

What makes a bad POE?
- Opposite of the above:
  - Expensive
  - Irrelevant
  - Time-consuming
  - No impact...
  - Not seen as ‘best practice’

POE vs. market survey?
- **POE:**
  - assesses environment in use
  - studies the fit or congruence between users’ needs and environment
- **market survey:**
  - could include POE component
  - but does not focus on environmental factors exclusively
  - non-users/potential users also included
- **both approaches are valuable:**
  - POE used more in architecture for redesign & new buildings for same client (e.g., a chain of restaurants)
  - each study generates different information re: demand, patterns of use
  - market survey: value of explaining nonuse
Feedforward from POEs improves future buildings

Performance Concept and the Building Process

POE Research Methods 1
- interviewer survey
- meetings with:
  - residents
  - professionals
  - staff
- camera work by:
  - investigator
  - respondents
- diaries/journals

POE Research Methods 2
- site evaluations
- cognitive/mental maps
- historical and other files ("archives")
- literature search
- "context" material:
  - demographic
  - sociological
- interviewer debriefing
- children and teens: special techniques

Management of a POE
- realistic expectations
- corporate commitment
- steering committee
- agreement about:
  - outcome
  - product
  - high-level supporter
  - trust
  - raised expectations
  - ongoing process — needs appropriate structure
  - adequate resources and funding
  - management and staff participation
  - persistence and flexibility
  - REALISTIC EXPECTATIONS

Indicative project schedule
Organisation of a POE 1

1. **TIME (%)**
   - study design: 15%
   - develop methodology: 60%
   - conduct study: 1%
   - analyse data: 5%
   - write up: 15%
   - try to get someone to listen: 4-15%
   - inexplicable delays: 100%*

Organisation of a POE 2

2. mix of methodologies/sampling
3. context
4. respect for respondents
5. instrument testing
6. interviewers
7. preliminary feedback
8. clear findings → **ACTION**

Products/Outcomes of POEs in Public Housing

- Guidelines
- Checklists
- Planning
- Design
- Management
- Briefing/programming
- Staff development materials
- Site evaluation forms
- Tenant participation strategies
- Data for lobbying Government
- Public relations
- Tenants’ handbooks
- Staff morale
- Allocations procedures
- Assessment of staff effectiveness & efficiency

When to Use the User-needs Approach 1

1. **MOST RELIABLE IN HOUSING**
   - everyday use
   - tangible requirements

2. **SOMEWHAT RELIABLE IN PUBLIC OPEN SPACE**
   - ... but ... observations tell only part of the story

When to Use the User-needs Approach 2

3. **LEAST RELIABLE IN LARGE (NON-LOCAL) PARK DESIGN**
   - infrequent use
   - conflicting demands

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Summary of POE Lessons 1

1. attempt only if sincere
2. ensure corporate-level support at highest level
3. locate trustworthy senior-level ‘helper’
4. take time to gain trust at all levels
5. select most appropriate method(s)
6. train interviewers thoroughly

Summary of POE Lessons 2

7. involve management staff and residents
8. contact local police and other authorities to reduce local events which could introduce bias
9. undertake survey in the least possible time
10. write questionnaire in plain language
11. pilot-test all materials

Summary of POE Lessons 3

12. translate in relevant languages, as necessary
13. provide ‘practical’ help to interviewers
14. debrief interviewers thoroughly
15. report back to participants/respondents
16. be prepared for difficulties
17. allocate enough time

3-day POE Training Workshop Format

- Empowers participants to do evaluations of their own facilities without POE consultant
- **Day 1:** POE instruction on methodology and case study examples
- **Day 2:**
  - field data gathering using quick surveys (for larger facilities: administer surveys and analyse before site visit)
  - interviews
  - observation
  - plan annotation
  - photography
- **Day 3:**
  - Draft executive summary report
  - present to senior management

Thorny questions about what’s next

- Advocate more investment in knowledge and database building?
- Is litigation an unwanted but likely consequence of critical scrutiny of building performance?
- Move closer to facilities management?
- Is design-build the answer?
- Who is in control of the building delivery process?
- Should architects take the lead?

(Preiser, 2005)