CREATING A PROJECT-BASED LEARNING-LOOP WITHIN THE CONSTRUCTION PHASE OF HEALTHCARE INFRASTRUCTURE PROJECTS

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Introduction

Research has stemmed from:

• Recognition that the current focus of attention is centred on learning from buildings in use and post occupancy evaluation (POE).
  - some benefits of learning from POE can be attributed to general learning

• Little focus on capturing lessons learnt from the construction phase of projects – improve buildability issues, value and quality.
Need for Research

• Currently a distinct lack of learning from the construction stage of projects
• Identified lack of research regarding feedback loops between construction and design stages
• Need to move away from single-loop learning (detection and correction) towards double-loop learning (prevention)

Envisaged Outcome

• Feedback framework which facilitates knowledge flow from construction stage to the design stage
  • Overcoming complex nature of the healthcare sector
  • Identifies what knowledge is relevant and of use
  • Addresses the difficulty in capturing, storing and sharing tacit knowledge
Current Situation

Planning → Design → Construction → Occupancy → POE

- Little past construction information / knowledge
- Same mistakes repeated
- High levels of rework
- Overruns, lower quality, increased costs
- Reduced quality, reduced value

Additional Feedback Framework

Planning → Design → Construction → Occupancy → POE

- POE + Construction information and knowledge
- Mistakes reduced
- Rework and overruns reduced
- Better quality, improved schedule, fewer disputes etc.
- Improved healthcare infrastructure
Alignment with Healthcare Infrastructure Project Objectives

• Desire to continuously improve quality of infrastructure
  - Therefore enhancing the delivery of the healthcare service

• Enable construction stakeholder perceptions to be captured to improve decision making in future projects
  - Regarding the rework and buildability of innovations and overall design

• Help understand how design innovations affect the construction of new healthcare facilities
  - i.e. how they can be continuously improved to offer greater value
Benefits of Additional Feedback

• Improved design quality — buildability of designs improved
• Reduced levels of rework — root causes established and rectified
• Innovative design solutions — greater intellectual capital held by project participants
• Reduce the tendency to ‘reinvent the wheel’
• Enhanced infrastructure quality and value — schedule delays and overruns reduced
Indirect Health Outcomes Benefits

- Improved value for money through reduced rework, delays, disputes etc. – enabling precious funds to be used elsewhere
- Reduced schedule delays – enabling critical services to be available earlier – less stress and disruption to patients
- Greater knowledge of design innovations – how they can be improved to enhance value / overall success
- Greater understanding of construction stage trade offs – e.g. design innovation vs. value, sustainability, health and safety etc.
Barriers to Additional Feedback

- Complexity of the participating stakeholders within healthcare infrastructure projects – i.e. Regulators / Commissioners / Healthcare Providers / Designers / Contractors / Users / Local Authorities etc.

- Project mentality – concerned with the successful completion of the current project

- Short term objectives – leaving no time / funds to fulfil long-term learning objectives

- Temporary project participants – individual partners are protective over their knowledge

- Unsupportive cultures – silos of knowledge, knowledge protection, resistance to change etc.

- Limited resources of SME’s

- Difficult to capture and share personnel tacit knowledge
Research Aim and Objectives

Overarching Aim:
“To develop an integrated framework to capture construction stage lessons learnt and feed these back into complex healthcare infrastructure projects, to improve the quality and buildability of designs”.

Research Objectives:
• To identify the barriers and enablers for a design-construction quality loop
• To investigate current practices (if any) designed to improve the feedback of poor design quality
• To review the relevant techniques and technologies that assist the delivery of a design-construction quality loop
• To develop a new design-construction quality loop framework (e.g. what information should be captured, in what format etc.)
• To evaluate its effectiveness and establish the business case for its adoption
Current Progress and Way Forward

Completed / Underway so far:
• Conducted initial literature review
• Developed research aim and objectives
• Evaluated research methodological approaches

Next 3 months:
• Develop and conduct exploratory case study
• Identify key area of healthcare infrastructure to focus upon
• Identify key buildability issues to focus upon
• Develop more targeted case studies to conduct in the future months
Interesting Framework Aspects

In addition to the identified benefits / barriers of a new feedback framework:

• Need to identify key learning objective – e.g. buildability issues
• Need to identify what knowledge is beneficial – avoid information overload
• Need to identify which format is best to capture, store and share such knowledge – most effective / efficient
• Need for a socio-technical systems approach – not simply a technology solution
• Desire for live knowledge capture where possible – to avoid knowledge deterioration / loss

Expect many more to emerge during the exploratory case studies....
Thank you for listening!

Any Questions or Suggestions?