Evaluating learning management mechanisms and requirements for achieving BIM competencies: an in-depth study of ACE practitioners

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Evaluating learning management mechanisms and requirements for achieving BIM competencies

Content

- Existing challenges and approaches to BIM adoption
- Research methods
- Findings:

1. **Skills** – Set of skills in the team; Openness to new ideas and learning; Communication and collaboration skills; Skill diversity in the team.
2. **Training approach** - ‘Structured’ approach and ‘Trial and error’.
3. **Responsibilities of top management:**
   - Accessibility of equipment, information and knowledge;
   - Commitment to change;
   - Relevant, motivating and simple;
   - Clear rationale and requirements.
Industry challenges we are tackling

- Key challenges from the literature: lack of skills in the industry, resistance to change and lack of commitment.
- Other challenges we have found:

Challenges we have asked about

- Resistance to change
- Lack of clarity
- Lack of commitment
- Lack of trust

Challenges emerging from the data

- Complexity of tools or process
- Pressure during the project delivery
- Not seeing benefits
- Lack of time
- Lack of support
- Lack of skills

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Approaches to BIM training and adoption

Current
- Structured external training
- Help of external consultants
- Some suggestions on – building collaboration, pilot projects, learning from the experience...

Challenge - The questions are how much BIM knowledge project teams retain and what is the level of their independence to deliver future BIM projects, without relying on external help?

Questions we are also looking into
- What are the skills required?
- What is expected from the top-management?
- How to respond to challenges we found?

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Research methods

- Semi-structured in-depth interviews.
- Participants with wide range of experience and diverse roles - from BIM consultants and managers to engineers experienced in delivery of BIM projects.
- Participants involved in range of projects from Infrastructure, Energy to Building sector across the UK and abroad.
- Period: April – August 2017.
- Qualitative data analysis.

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Findings - Soft skills as enablers

- Soft skills as enablers:
  - “Being open to learning and hearing about new technology”;
  - “Open to collaborating”.
  - Initiative to learn on their own.

They enable principles of good management practice with BIM and other soft skills needed:
- Collaborative and supportive team;
- Sharing the information;
- Diverse inputs.

Figure 1 – Essential skill sets for effective BIM adoption

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Findings - Skills - Building openness

- Resistance to change
- Resistance to change vs. age gap
- Solutions
  - What management can do?
  - What team members must do?

Challenges we have asked about

- Communication challenges
- Resistance to change
- Lack of clarity
- Lack of trust
- Lack of commitment

Challenges emerging from the data

- Complexity of tools...
- Pressure during the...
- Cost
- Not seeing benefits
- Cultural clash
- Equipment
- Interoperability
- Lack of skills
- Lack of time
- Lack of support

Milivojevic, Ahmed (2018)
Findings – Skills

Other findings:

- Communication and collaboration skills:
  - For BIM managers;
  - Within the project team;
  - Within the wider project team.

- Skill diversity in the team:
  - Range of skills;
  - Range of inputs.

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Findings - Training approach

- Questions to respond:
  - What?
  - Why?
  - How?

General training session
- Peer to peer support
- Supportive material: guidelines, videos...

Learning by doing
- In-team support - BIM champions
- Specific customised training

Support
- Continuous learning and development

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Findings – Responsibilities of top management

Key findings:

- Accessibility of equipment, information and knowledge
  - Commitment to change
  - Relevant, motivating and simple
  - Engaging everyone
  - Clear rationale and requirements

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Conclusions and QA

Key points to conclude:

- Enabling ‘learning by doing’
- Top support
- Individual skills and responsibilities
- Shared learning

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Thank you!