



Designing a Pedagogical Model for Value Management in Built Environment Programs

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KEYWORDS

ABSTRACT

Value Management (VM) is a systematic and structured approach aimed at maximizing value in construction projects by optimizing the balance between function, cost, and quality. In postgraduate construction and property education, teaching VM effectively is essential for preparing professionals capable of delivering high-value, cost-efficient, and sustainable projects. However, traditional teaching methods often fail to convey the practical and collaborative nature of VM.

This study explores the pedagogy of teaching Value Management in postgraduate construction and property programs. It evaluates existing teaching practices, identifies limitations, and proposes an innovative pedagogical framework that incorporates experiential learning, case studies, and collaborative problem-solving. The proposed approach emphasizes real-world applications, interdisciplinary learning, and the use of modern tools. The study concludes that adopting interactive and practice-oriented teaching strategies significantly enhances students' understanding and application of VM principles.

INTRODUCTION

The construction and property sectors are increasingly focused on delivering projects that provide maximum value to stakeholders. Value Management (VM) plays a critical role in achieving this objective by ensuring that project functions are delivered at optimal cost without compromising quality.

Architectural design education remains central to scholarly discourse on pedagogical innovation and

professional preparation. Despite decades of reform, a persistent disconnect exists between academic instruction, the holistic practice of design—including creative processes, stakeholder interactions, lived experiences, and design outcomes—and architectural research. This disjunction limits graduates' ability to engage effectively with complex professional realities and reduces the social and contextual responsiveness of architectural education. Globally, the design studio

remains the pedagogical backbone of architectural curricula; however, its continued reliance on conventional, instructor-centered approaches often constrains innovation and critical engagement. Scholars have argued that these traditional studios are not only pedagogically limited but also socially inadequate, failing to prepare graduates to address urgent societal challenges such as housing, climate change, and social inequities. Globally, architectural schools have increasingly experimented with transformative and experiential approaches to connect students with real-world design challenges. In Indonesia, community-based experiential learning initiatives bridge the gap between theory and practice by immersing students in socially grounded design contexts. Similarly, participatory and interdisciplinary studios at Middle East Technical University (METU) in Turkey foster social awareness, collaborative learning, and reflective design thinking. Recent experiments in advanced architectural studios (AD VII) demonstrate that collaborative and interdisciplinary approaches enhance students' engagement with diverse perspectives, research depth, and cross-scale design strategies, promoting socially responsive design processes. In Colombia, although architectural education has traditionally followed a master-apprentice model with weak integration between theory and practice, participatory and student-centred design experiences improve students' critical engagement with socio-spatial issues and their ability to apply knowledge in contextually responsive ways.

LITERATURE SURVEY

Value Management in Construction

- Findings: Improves project outcomes
- Limitation: Complex implementation

Teaching Methods in Construction Education

- Findings: Active learning enhances understanding
- Limitation: Resource requirements

Experiential Learning Theory

- Findings: Learning through experience is effective

Case-Based Learning

- Findings: Improves problem-solving skills
- Limitation: Time-intensive

Collaborative Learning

- Findings: Enhances teamwork and communication

Educational Studies

• Common Findings:

- o Interactive methods improve engagement
- o Real-world applications are essential
- o Continuous assessment enhances learning

EXISTING SYSTEM

The existing system for teaching Value Management (VM) in construction and property programs is predominantly based on traditional pedagogical approaches that emphasize theoretical knowledge over practical application. In most institutions, VM concepts are delivered through lecture-based methods, where instructors focus on explaining principles such as cost optimization, function analysis, and lifecycle costing using textbooks and slide presentations. While this approach provides foundational knowledge, it often lacks engagement and does not adequately prepare students for real-world challenges. Practical exposure is minimal, as students rarely participate in actual Value Management workshops or industry-based projects. Case studies, if included, are often outdated or too generic, limiting their relevance to current construction practices. Additionally, VM is typically taught as an isolated subject without integration with related disciplines such as project management, sustainability, and risk analysis, resulting in a fragmented understanding of construction processes. The use of modern digital tools, such as Building Information Modeling (BIM) or cost estimation software, is also limited, further widening the gap between academic learning and industry requirements. Assessment methods are largely exam-oriented, focusing on memorization rather than critical thinking, creativity, and problem-solving skills. As a result, students often graduate with insufficient practical knowledge, weak decision-making abilities, and limited exposure to collaborative and interdisciplinary work environments, making it difficult for them to effectively apply VM principles in professional settings.

DRAWBACKS OF EXISTING SYSTEM

1. Lack of practical exposure
2. Limited student engagement
3. Poor understanding of real-world applications
4. Lack of collaboration
5. Limited critical thinking development
6. Minimal use of technology

7. Passive learning environment
8. Limited interdisciplinary learning
9. Inadequate skill development
10. Poor alignment with industry needs

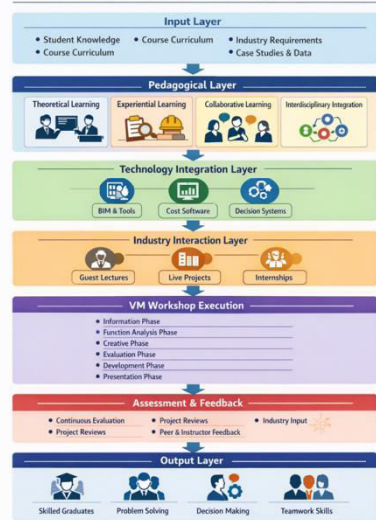
PROPOSED SYSTEM

The proposed pedagogical framework introduces a comprehensive, student-centered approach to teaching Value Management that integrates theoretical learning with practical application, industry collaboration, and technological advancements. This system emphasizes experiential learning, where students actively engage in problem-based learning, real-world case studies, and simulated Value Management workshops that replicate industry scenarios. By adopting a “learning by doing” approach, students develop a deeper understanding of VM concepts and their practical implications. The framework also promotes strong industry integration through guest lectures, internships, and live projects in collaboration with construction companies and property developers, ensuring that students gain exposure to current practices and challenges. The use of modern digital tools, such as BIM, cost analysis software, and decision-support systems, is incorporated into the curriculum to enhance technical proficiency and align education with industry standards. Furthermore, the proposed system adopts an interdisciplinary approach by integrating VM with subjects like project management, sustainability, and financial planning, enabling students to develop a holistic perspective of construction projects. Collaborative learning is another key component, where students work in teams, participate in role-playing exercises, and simulate professional roles such as project managers, cost engineers, and clients. A structured VM workshop model is implemented, guiding students through phases such as information gathering, function analysis, creative idea generation, evaluation, development, and presentation. Assessment is continuous and skill-based, focusing on projects, presentations, teamwork, and critical analysis rather than traditional exams. Overall, this proposed framework enhances student engagement, improves practical and analytical skills, fosters innovation, and better prepares graduates for the demands of the construction and property industry.

ADVANTAGES OF PROPOSED SYSTEM

- Improved understanding of VM concepts
- Enhanced practical skills
- Increased student engagement
- Development of teamwork skills
- Better problem-solving abilities
- Improved industry readiness
- Enhanced critical thinking
- Effective application of knowledge

Pedagogical Framework for Teaching Value Management in Construction and Property Programs



METHODOLOGIES

Research Design

- Comparative study of traditional and proposed methods

Data Collection

- Student feedback
- Academic performance analysis

Tools and Techniques

- Case studies
- Simulation tools
- Surveys

Implementation Steps

1. Curriculum redesign
2. Faculty training
3. Implementation of new methods
4. Continuous evaluation

Evaluation Metrics

- Student engagement
- Learning outcomes
- Skill development
- Feedback analysis

CONCLUSION

Effective teaching of Value Management in postgraduate construction and property programs requires a shift from traditional lecture-based methods to interactive and experiential approaches. The proposed pedagogical framework integrates practical learning, collaboration, and technology to enhance student understanding and application of VM principles.

By adopting this approach, educational institutions can better prepare students for the complexities of modern construction projects and improve overall educational outcomes.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

- [1] Lumpe, T.S.; Shea, K. Computational Design of Multi-State Lattice Structures with Finite Mechanisms for Shape Morphing. *J. Mech. Des.* 2023, 145, 071701. [Google Scholar] [CrossRef]
- [2] Zhao, X.; Zhang, T.; Xiao, W. An Automated Design Method for Plane Trusses Based on User Preference Information. *Appl. Sci.* 2023, 13, 1543. [Google Scholar] [CrossRef]
- [3] Markou, G.; Bakas, N.; Megan Van Der Westhuizen, A. Use of AI and ML Algorithms in Developing Closed-Form Formulae for Structural Engineering Design. In *Advances in Civil and Industrial Engineering*; Plevris, V., Ahmad, A., Lagaros, N.D., Eds.; IGI Global: Hershey, PA, USA, 2023; pp. 73–105. [Google Scholar] [CrossRef]
- [4] Chang, K.-H.; Cheng, C.-Y. Learning to Simulate and Design for Structural Engineering. In *Proceedings of the 37th International Conference on Machine Learning, Online, 13–18 July 2020; Volume 119*, pp. 1426–1436. Available online: <https://proceedings.mlr.press/v119/chang20a.html> (accessed on 27 July 2024).
- [5] Paz, M. *Dinámica Estructural. Teoría y Cálculo*; Reverte: Barcelona, Spain, 2021. [Google Scholar]
- [6] Galambos, T.V.; Surovek, A.E. *Structural Stability of Steel Concepts and Applications for Structural Engineers*; John Wiley & Sons.: Hoboken, NJ, USA, 2008. [Google Scholar]
- [7] Zhong, W.; Wu, Z.; Wu, H.; Zhao, K.; Bao, W.; Wei, C. Control and instability analysis of multiple inverters parallel based on droop control. In *Proceedings of the 2022 4th International Conference on Electrical Engineering and Control Technologies (CEEET), Shanghai, China, 16–18 December 2022*; pp. 777–782. [Google Scholar] [CrossRef]
- [8] Belash, T.; Svitlik, I. On the issue of improving the seismic resistance of suspended buildings in areas of high seismic activity. *Earthq. Eng. Constr. Saf.* 2023, 6, 54–66. [Google Scholar] [CrossRef]
- [9] Masi, A.; Santarsiero, G.; Chiauzzi, L.; Gallipoli, M.R.; Piscitelli, S.; Vignola, L.; Bellanova, J.; Calamita, G.; Perrone, A.; Lizza, C.; et al. Different damage observed in the villages of Pescara del Tronto and Vezzano after the M6.0 August 24, 2016 central Italy earthquake and site effects analysis. *Ann. Geophys.* 2017, 59, 53. [Google Scholar] [CrossRef]
- [10] Xie, J.; Shen, S.-D.; Hua, Y. A mode selection procedure for a seismic response prediction method based on micro-tremor measurements. *Soil Dyn. Earthq. Eng.* 2023, 175, 108271. [Google Scholar] [CrossRef]
- [11] Yamin, L.E.; Reyes, J.C.; Rueda, R.; Prada, E.; Rincon, R.; Herrera, C.; Daza, J.; Riaño, A.C. Practical seismic microzonation in complex geological environments. *Soil Dyn. Earthq. Eng.* 2018, 114, 480–494. [Google Scholar] [CrossRef]
- [12] Khan, S.; Waseem, M.; Jan, S. Site response studies in Peshawar using the Nakamura technique of HVSR. *Arab. J. Geosci.* 2021, 14, 193. [Google Scholar] [CrossRef]
- [13] Piancastelli, L. Common Mistakes and Their Fixes in Earthquake-Resistant Buildings. *Acadlore Trans. Geosci.* 2022, 1, 12–21. [Google Scholar] [CrossRef]
- [14] Chopra, A.K. *Dynamics of Structures: Theory and Applications to Earthquake Engineering*, 5th ed.; Pearson Education: London, UK, 2019; ISBN 9781292249186. [Google Scholar]
- [15] O'Reilly, G.J.; Calvi, G.M. Conceptual seismic design in performance-based earthquake engineering. *Earthq. Eng. Struct. Dyn.* 2019, 48, 389–411. [Google Scholar] [CrossRef]