



A New Developing Construction Management Training Programmes on Lean Construction

Dr. Sunil V. Desale

Associate Professor, Department of Civil Engineering, SES College of Engineering, Navalnagar Dist Dhule,(MS)India

Divya G. Gosavi

M E Student Department of Civil Engineering, SSVPS B S Deore College of Engineering, Dhule, India

ABSTRACT

The consolidation of the Lean Construction theory depends on the application of its principles and concepts by practitioners. Only feedback from the construction industry itself can support further research on the analysis and adaptation of the Lean principles to the construction process. Therefore, it is necessary to work on construction manager's education in order to incorporate the lean concepts and principle as well as approaches in their daily practice by (PBL) Problem base learning method.

This paper describes an ongoing research project concerned with the development of construction management PBL training programmers on lean construction, aiming at encouragement changes of pattern in process management. The learning process for research students was carried out, focusing mainly on the relationship between teacher and students along lectures dealing with lean construction concepts and principles. The study has indicated that it is relatively straightforward for the students to understand and to apply some basic concepts like process, operation, conversion and flow activities and the general concept of waste. But it has also pointed out that it is not so easy for them to understand and comprehensively incorporate the lean construction principles and approaches.

KEYWORDS : Lean Construction learning, management education, (PBL) Problem base learning.

INTRODUCTION

When new technology, time, economics, and financial support are taken into consideration one must keep in mind that the old thinking pattern, methodology its approach of construction in practices must be abandoned.

In India particularly in Khandesh reason for contractors, builders, an entrepreneur, trading is easy due to enormous housing problems and easy housing loan support from government / private financials. Inspite of the changes in construction practices, methodology, technology the culture among the professionals remains quite the same. Such culture set barriers to change in thinking and action patterns. The principle from manufacturing process to the construction process is not straightforward. One must understand the meaning of the concept, principles and approaches used to explain and improve manufacture process and then afterwards transform them to the construction practices.

LITERATURE SURVEY

The learning process as a fundamental aspect to change thinking patterns and managerial paradigm. Learning process as an important element to change process within organizations. Pedler et. al. (1991) says learning is a very broad concept, it is rather problematic. However, organizational learning presents a complex set of variables to those related to the individual learning process. Learning is mainly a matter of the acquisition of meanings through a social-historical relation with the world say Vygotsky in (1993). Knowles (1984) points out the main difference between the pedagogical and the andragogical models used in education. Garvin (1993) says that an organizational skilled at crating, acquiring, transferring knowledge, and modifying its behavior to reflect new knowledge and insights. Three main approaches have been identified for developing the study.

First approach - A tool to the negotiation of meanings

Second approach – Organizational learning

Third approach – Action learning

THE MEANING OF LEARNING

In order to present the diversity of approaches related to the concept of learning, Pedler (1997) identifies four different categories of learning,

ing, drawn from the literature:

- We can learn about things, which mean acquisition of knowledge. Both the memorization and the 'knowing why' are included in this category, which is concerned with knowing the theory and getting information;
- We can learn to do things, or acquire new skills, abilities and competencies. This category includes mental and manual skills, social abilities with others and competence in complex situations. Pedler stresses that there are criticisms about splitting knowledge (theory) from doing things (practice), mostly by researchers involved in action learning approaches;
- We can learn "to become ourselves, to achieve our full potential in our lives". It means personal development, involving intellectual growth and skill acquisition. It is related to personal satisfaction, according to one's purpose in life and identity; and
- We can learn "to achieve things together", which Pedler calls collaborative enquiry. It is suggested that learning is a result of interaction between people: people gather to do things together, either intellectual or manual activities, on behalf of the group.

From the first to the last aspect, the learning approach evolves from individual to collective, from passive to active, and from specific to holistic.

METHODOLOGY OF LEARNING

Based on the theory formulated hypotheses is done to solve the problem, then apply and observe the consequences of it. In the exploratory study this approach was adopted. This approach is known as PBL (problem based learning), which was structured in following steps-

1. The research was asked to analyze a construction farm in site (like e.g .Masonry, formwork, painting etc.
2. Present it to the group and pointing out the incidence of waste with suitable reasoning, Why? When? How? It has happens.
3. The core points/problems were discussed with Guide/the lecturer until they know nothing about lean construction theory.
4. After third step the guide/ lecturer presented the concepts and principles of the lean construction to the researcher by showing some images to give examples of the approaches and principles.
5. Researcher then tries to make links between the problems observed and discussed earlier and the theory.

6. 6)After data collection on building site ,developing and analyzing some process using lean management tools like process mapping, flow chart, check least of site condition ,work sample, production chart etc.
7. Case study, its discussion and development, finding results.
8. Objective of all the steps was to evaluate whether the student/ researcher were able to apply the lean construction principles for minimizing the waste.

CONCLUSION

Nothing is more practical than theory, which explains Why? When? How? What and Why? Lean construction institute used a research institute explaining sacking and theory driven. In current practices a delay, is often attribute to morally deficient sub contractors.

The application of the problem based learning to research students has observed positive aspect but, as used must be practical and must allow the training to improve ability to learn. This is the most important requirement of the organization.

Ongoing research study tries to make links between the problems observed and discussed earlier and the theory and indented to improve the application of the lean principles and approach in the construction industry .As the theory is still under discussion, but aspects remain unchanged and to learn from it.

Case Study Protocol, Company Interview

Introduction:

- Inform the respondent about what the interviewers are studying
- Objectives with the interview:
- Explain how the interview is going to be executed

QUESTIONNAIRE

Background Information:

- What is your field of expertise?
- What kind of earlier work or academically experiences do you possess?
- Have you carried out any projects in the construction industry?
- Have you any experience on construction sites?

RQ1 – What type of waste can be identified in construction operations?

- Is it generally difficult to see if an activity is value-adding or not for a project?
- What would value-adding activities look like from a customer perspective?
- What different forms of waste can you imagine that exist on a building site?

RQ2 – How can waste be identified?

- Have you any experience of improvement work?
- What tools and methods can be useful for identifying waste in an organization
- What kind of tools and methods can be appropriate specifically for the construction industry?
- How can these tools and methods be standardized and applied within the construction industry?

RQ3 – How can the identified waste be measured?

- How have you worked with the measurability of results of previous projects?
- How were the metrics chosen and what was the result?
- How is the result visualized?
- What metrics can be appropriate to measure waste?
- What kind of KPIs can be useful for analyzing a construction site?

RQ4 – How is one to decide in what order to reduce waste?

- Who determines in what order the waste reduction is prioritized?
- How do you determine what problem to deal with first?
- Is there a way to determine how difficult a problem is to solve?
- Do you use a method to assure that local optimization is avoided?

RQ5 - What potential effects could a lean approach have on a construction site?

- What kind of consequences might waste reduction result in?
- Would the benefits of a waste elimination approach overrun the efforts needed?

OVERVIEW OF INTERVIEW

1. Construction site 1
2. Construction site 2
3. Construction site 3
4. Lean Expert 1
5. Lean Expert 2
6. Lean Expert 3
7. Academic
8. Academic
9. Academic

RQ I

		1	2	3	4	5	6	7	8	9
1.1	Is it generally difficult to see if an activity is value-adding or not in a project?	X	X	X	X	X	X	X	X	X
1.2	What would value-adding activities look like from a customer perspective?	X	X	X	X	X	X	X	X	X
1.3	What different forms of waste can you imagine that exist on a building site?	X	X	X	X	X	X	X	X	X

RQ II

		1	2	3	4	5	6	7	8	9
2.1	Have you any experience of improvement work?	X	X	X	X		X	X	X	
2.2	What tools and methods can be useful for identifying waste in an organization?	X	X	X	X	X	X	X	X	X
2.3	What kind of tools and methods can be appropriate specifically for the construction industry?		X	X	X	X	X	X	X	X
2.4	How can these tools and methods be standardized and applied within the construction industry?	X	X	X	X	X	X		X	X

RQ III

		1	2	3	4	5	6	7	8	9
3.1	How have you worked with the measurability of results of previous projects?	X	X	X	X		X	X	X	
3.2	How were the metrics chosen and what was the result?				X	X		X	X	X
3.3	How is the result visualized?	X			X	X	X			X
3.4	What metrics can be appropriate to measure waste?	X	X	X	X	X	X		X	X
3.5	What kind of KPIs can be useful for analyzing a construction site?	X	X	X	X	X	X	X	X	X

RQ IV

		1	2	3	4	5	6	7	8	9
4.1	Who determines in what order the waste reduction is prioritized?	X	X	X		X			X	X
4.2	How do you determine what problem to deal with first?	X	X	X	X	X	X	X	X	X
4.3	Is there a way to determine on what level to solve the problem or how deep into the causes to go?	X			X	X			X	X
4.4	Do you use a method to assure that local optimization is avoided?	X	X	X	X	X	X	X	X	X

RQ V

		1	2	3	4	5	6	7	8	9
5.1	What kind of consequences might waste reduction result in?	X	X	X	X	X	X	X	X	X
5.2	Would the benefits of a waste elimination approach overrun the efforts needed?	X	X	X	X	X	X	X	X	X

[X] Responded

[]

Question Not Asked



REFERENCES

- ## REFERENCES
1. Arditi, D., & Mochtar, K. (2000). Trends in productivity improvement in the US construction industry. *Construction Management and Economics*, 18, 15-27. | 2. Ballard, G., & Howell, G. (1998). *Shielding Production: Essential Step in Production Control*. Journal of Construction Management & Engineering, 11-17. | 3. Bryman, A. (2004). *Social Research Methods*. Gosport, Hampshire: Oxford University Press. | 4. Green, S. D., & May, S. C. (2005). Lean construction: arenas of enactment, models of diffusion and the meaning of 'leanness'. *Building Research and Information*, 33 (6), 498-511. | 5. Koskela, L. (1992). Application of the new production philosophy to construction. Technical Report # 72 CIFE, Department of civil engineering, Stanford University. | 6. Lean Construction Institute. (2007). *Lean Construction Institute: What is Lean Construction*. Retrieved Februari 17, 2011, from Lean Construction Institute: Lean Construction Institute: What is Lean Construction |