Workshop on the Teaching of Public Administration and Policy

Problem Based Learning: Public Policy for Infrastructure Development and Financing

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ABSTRACT

Problem Based Learning (PBL) is a curriculum development and learning system that develops problem solving strategies by placing participants in the role of problem solvers confronted with real world problems. This system is similar to the method of learning with cases, used quite significantly in professional courses like management, medicine and law.

PBL can play a significant role in the context of public policy for infrastructure development and financing, especially since multiple stakeholders (political leaders, bureaucracy, developers, financiers, consultants etc) are involved in the changing paradigm of public private partnerships, where each other’s perspective needs to be understood. PBL also develops structuring and conceptualisation skills from real life situations in the context of a decision. A standard theory may not work, since situations tend to be different. At the same time, there is scope to appreciate similarities of structures and concepts across what may be considered as different situations, like different sub sectors of infrastructure.

This paper would highlight the author’s experiences in using PBL in the design and delivery of courses related to infrastructure development and financing. The author has documented more than 30 case situations in this domain and has lead edited a case book on the subject. Cases have been written in a variety of sectors like airports, ports, postal services, railways, roads and telecom, covering a range of issues such as project structuring, financing, bidding, project management, post project issues, regulation etc. The author also has experience in using cases written by others to provide comprehensiveness in the courses, from the perspectives of sectors, country coverage, issues etc. The paper would also reflect on the differences between using PBL in a public policy context vs a more traditional management learning context.

The key activities that would be described are (i) writing case studies, (ii) designing courses and (iii) classroom delivery.

Some of the key learnings from the experience of nearly ten years have been

- Significant effort needs to be put in by the faculty for case writing and selection of cases written by other authors, so that a first hand feel of the decision making processes are obtained. In this context, writing cases is better than using pre written cases, though for comprehensiveness, the latter would be necessary.
- Significant effort on course design, choice of cases, guiding pre classroom preparation and classroom moderation is required on the part of the coordinator and faculty for effective learning.
- Though there is initial discomfort for the participants (especially the policy makers) since their assumptions are being challenged, acceptance of multiple perspectives which need to be dealt with in a mature manner is recognised by the end of the course.
1. INTRODUCTION

Problem Based Learning (PBL) is a curriculum development and learning system that develops problem solving strategies by placing participants in the role of problem solvers confronted with real world problems. This system is similar to the method of learning with cases, used quite significantly in professional courses like management, medicine and law.

As reported in [Damle, 1988], there was a controversy as early as 1922 in using the terms “problems” and “cases”. The HBS school of thought preferred the use of the word “case” rather than “problem”, since the former connoted greater reality and always included one or more problems. The word “case” has been prevalent in professional fields such as Medicine and Law and then percolated into Administration and Management. In the context of Administration and Management, a “problem” has often been associated with a specific decision, while a case is a description of the holistic context, from which “problems” which need to be resolved should be extracted and analysed.

In our current context, the term problem based learning is gaining significance, often driven by literature from UK and countries closer to it in terms of research networking, for example Australia. My own view is that these are just two faces of the same coin, possibly driven by American or British literature. Given the title of this workshop, we proceed with the term Problem Based Learning (PBL)!

My background has been in the management stream, learning and facilitating to learn by the case method, or rather PBL. Over the past 20 years I have developed case studies initially in the context of transport enterprise management, followed by logistics and supply chain management and then services management. These helped me in classroom delivery of the traditional functional courses like Operations Management, Marketing Management and even a tool based course like Quantitative Methods. It also gave me the confidence and intellectual platform to develop new courses like Logistics Management and Services Management.

All this while, my interest in the area of transportation and more generally in the area of infrastructure grew. These areas were significantly influenced by public policy issues. At the same time, due to liberalisation and deregulation in the country, management oriented training from institutions such as ours were increasingly sought by the government. Further, due to privatisation, increasing use of professional consultants and financing from a variety of financial institutions, our own MBA students were moving into positions of dealing with the government in areas of infrastructure development. Visualising a need for developing courses and programmes in such areas, I focussed on developing cases so that PBL could be effectively used as the learning methodology.

The context of infrastructure development and financing is undergoing a paradigm shift of bringing in increased commercialisation as a driver for development, and hence, offers opportunities of management within a public policy context. The sectors leveraging this shift are energy and power, information and communication technology, sewerage and solid waste management, transportation (air, maritime, pipeline, rail, and road), urban development, and water resources.

Some of the differences between using PBL in a public policy context versus the traditional management learning concepts are as follows:
<table>
<thead>
<tr>
<th>Context</th>
<th>Management</th>
<th>Public Policy</th>
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<tbody>
<tr>
<td>Problem definition</td>
<td>Easier, since it is focussed at an enterprise level with profitability as the primary goal.</td>
<td>More difficult, since it is focussed at a macro level (public enterprise where profitability is just one of the goals, local/state/central government, non governmental organisation) with a complex set of social goals apart from financial health.</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Fewer in number with sharper interests</td>
<td>Usually, a larger number of stakeholders with varying and conflicting interests</td>
</tr>
<tr>
<td>Criteria for analysis</td>
<td>Criteria generation is cleaner. More importantly, prioritisation across criteria is easier.</td>
<td>Criteria generation needs to be more exhaustive. Prioritisation across criteria is more difficult.</td>
</tr>
<tr>
<td>Analysis</td>
<td>Can often follow a specific framework, with more objective and quantitative orientation.</td>
<td>Qualitative factors often override and influence the framework for quantitative analysis.</td>
</tr>
<tr>
<td>Audience outlook</td>
<td>Relatively open or at least value different perspectives</td>
<td>Relatively closed and defensive towards different perspectives.</td>
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From the above, it is at least clear to me that the PBL approach is far more important in the public policy context where the need is for greater openness to analytical approaches rather than a bureaucratic approach where something is done because that is how it has always been done or has been “manualised” so.

Our institute has also been called upon to design, develop and deliver training modules to specific infrastructure organisations, both in the public and private sector. Specific modules and programmes have also been targeted at “training the trainers” in training institutions such as ALTTC (telecom), CIRT (road transport), IMTC (maritime), LBSNAA (civil services) and RSC (railways).

2. WRITING CASE STUDIES

The changing frameworks of infrastructure development, especially in their nascent stages, offer rich opportunities for case development. The range of issues that can be focussed on, broadly classified along the life cycle of an infrastructure project, are project structuring, risk analysis financing, bidding, project management, post project issues and regulation.

Picking up a lead for writing up a case is rather easy since media focuses a lot of attention on infrastructure. Of course, media cannot be relied on for facts. Being in the public domain, availability of factual information in a transparent manner is less of a problem (than in the management context). However, collection of information from the varied stakeholders and reconciling the same is often a challenging task.

One of the most important values gained from writing case studies is for the author who can obtain a first hand feel of the decision making processes in the concerned context. This enables better course design and delivery.

3. DESIGNING COURSES

There have been many courses in the domain of infrastructure development and financing that I have been associated with for design, development and delivery. Some of the titles are Infrastructure Management and Implications for Logistics (for MBA students), Infrastructure Development and Financing (both for MBA students, and working executives including policy makers), Logistics and Infrastructure Management for Agriculture (for MBA students in the Agri Business Management programme), Frontiers in Infrastructure Finance, in collaboration with the World Bank Institute, (for working executives including policy makers), and Legal and Regulatory Issues in Infrastructure (for MBA students). These courses
have typically been of a 25 session (70 minutes for MBA students and 75 minutes for executives) duration, often including a project assignment for the MBA students.

I extract below from our first book publication [Raghuram et al, 1999] consisting of cases on the subject.

One of the early debates related to whether a course on Infrastructure Development and Financing would actually add to a body of knowledge, with a conceptual base (and thus whether it warrants a separate course) or whether it was an application context like any other. It was agreed that the context was significant both in variety and complexity of issues and hence a course aimed at this context with an inter disciplinary approach would be viable. For example, topics like demand assessment, pricing, project structuring, risk assessment, non-recourse financing, regulatory and legal issues had to be dealt with concepts that were specific to the nature of this sector. It could also generate research interest for further context specific conceptual development.

Another debate related to the structuring of this course, whether it should be issue based, cutting across sectors or sector based. We started on the former premise in the first offering in early 1997. There were difficulties, both conceptual (range of available sectoral case studies were not balanced across issues) and logistical (since as faculty with primarily sectoral expertise, we had to coordinate more and keep coming back at different points in the course). Even other secondary material tended to examine a variety of issues related to a sector rather than address an issue in depth with examples from various sectors. This was possibly because addressing a sector had greater relevance for implementation, and was thus more customer friendly. (In fact, the same principle manifests itself at a more aggregate level in the earlier debate.) In consideration of these issues, and reinforced by the participants’ feedback, the course structure was redesigned for the second offering around sectoral themes, except the first module (overview) and the last module (infrastructure financing).

The first course, offered in the academic year 1996-97, attracted a registration of 64 participants. The second offering, in the academic year 1997-98, attracted a registration of 123 participants, putting to rest any doubts regarding the need for such a course. In terms of material, five out of the 24 items in this book were written after the first course, motivated by the course. The objective of the Infrastructure Development and Financing course as provided to the participants was:

Provision of infrastructure facilities, traditionally in the government domain, is now being offered for private sector investment and management in most countries. This trend has been reinforced by the resource crunch faced by many governments. Infrastructure projects, with private participation, worth several hundred billions of dollars using some form of ‘project finance’ are under consideration in many emerging markets. These projects present unique problems for structuring, risk management and financing as they are usually characterised by large investments, long gestation periods and very specific domestic markets. This course provides the participants with the skills and understanding necessary to structure, appraise, finance and implement infrastructure projects in sectors such as power, telecom, transport (including rail, roads and ports), urban utilities and tourism.

The main pedagogy adopted for these courses was the case method, supplemented by project work and lecture-discussions. About 10 out of the 13 cases in this book have been used in the courses, apart from most of the papers as course readings. The courses also had additional readings from sources like the World Bank, etc.

Given the success of the course offerings at the MBA level, a one week Management Development Programme (MDP) aimed at senior executives was launched in February 1998. The intended audience, programme objective, content and methodology were as given below:

For Senior executives of organisations involved in infrastructure development and financing, including government, banks, and financial institutions, infrastructure providing organisations in sectors like power, telecommunication, transportation (ports, railways, roads), urban systems, etc.
**Objective**
Provision of infrastructure facilities, traditionally in the government domain, is now being offered for private sector investment and management in most countries. India has joined this trend, which has been reinforced by the resource crunch faced by the government. Infrastructure projects, with private participation, worth several hundred billions of rupees using some form of “project finance” are under consideration in many emerging markets. This programme aims to provide participants with the perspectives, concepts, and skills necessary to structure, unbundle, appraise, finance, and implement infrastructure projects.

**Content**
The programme content revolves around a framework for examining issues in infrastructure development and financing, with both Indian and international case studies from various sectors. The following topics are addressed:

- Infrastructure: Demand and Supply Gap
- Role of Public and Private Sectors
- Unbundling
- Project Structuring
- Financial Engineering
- Project Management

The programme explores issues common to all infrastructure sectors. However, examples specifically address energy, telecommunications, ports, roads, railways, and urban sectors.

**Methodology**
Case studies
Group discussions and presentations
Experience sharing

The above courses have been offered every year since the start with increasing participation and proliferation of related courses. Most of the offerings have been multi faculty (at least three), not a common practice at our institute. This in itself addresses the concern of being issue based vs sector based. Faculty, while coming from the background of a specific discipline (economics, finance, information technology, operations research/systems analysis), also tend to specialise in specific sectors since the client system networking drives it in that manner. Each course also brings in a few guest faculty to provide the flavour of practice in the real world. Additional case material has been developed year after year, often using the contacts provided by the participants and the guest faculty.

The issue of appropriate course design (choice of topics, cases and sequencing) needs to be revisited for every offering, keeping in view various criteria like (i) issue based vs sector based inputs, (ii) sequencing to broadly reflect the project life cycle, (iii) logistical requirements of the in house faculty and the guest faculty (complicated by the multi faculty nature of the courses) and more specifically (iv) the feedback provided by the participants for each course. Choice of cases also need to be driven by criteria like (i) home country vs international, (ii) author’s own case or any other appropriate for an issue/sector and (iii) comprehensiveness.

4. **CLASSROOM DELIVERY**

For effective delivery, the role of the coordinator becomes critical. In the MBA targeted courses, it is primarily due to the multi faculty nature of the course. In the executive targeted courses, the coordination has also to address the varying expectations of the participants and the initial resistance that the policy maker segment often demonstrates in such a learning environment.

In the executive targeted courses, managing the participants’ time for the entire day is critical. Significant effort on guiding pre classroom preparation and classroom moderation is required on the part of the faculty for effective learning. Though there is initial discomfort for the participants (especially the policy
makers) since their assumptions are being challenged, acceptance of multiple perspectives which need to be dealt with in a mature manner is recognised by the end of the course. Opportunities for reinforcing the concepts, for example, the need for unbundling the roles of the regulator, licensor and developer, or identifying non conventional (but related) sources of revenue for infrastructure projects should be leveraged by the faculty, with the support of the coordinator.

One of the principles that initially had resistance form the government was the idea of involving both policy makers and private players in the same course. We wanted the mix since it would truly reflect the principle of public private partnerships for infrastructure development. In the first programme, the government sent in observers to make sure that the delivery and classroom dynamics were not “dysfunctional”. After being convinced that it indeed was a success, not only have government sponsored courses related to infrastructure and public policy been opened up to private players, but also policy makers have been permitted to participate in the regular management development programme offerings of the institute for the corporate sector.

5. CONCLUSIONS

- Significant effort needs to be put in by the faculty for case writing and selection of cases written by other authors, so that a first hand feel of the decision making processes are obtained. In this context, writing cases is better than using pre written cases, though for comprehensiveness, the latter would be necessary.
- Significant effort on course design, choice of cases, guiding pre classroom preparation and classroom moderation is required on the part of the coordinator and faculty for effective learning.
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6. BIBLIOGRAPHY


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Specialization in logistics and supply chain management, infrastructure and transportation systems. Research, consultancy, case studies and publications focus includes railways, ports and shipping, road sector, service organizations and issues in logistics and supply chain management. Taught at Northwestern University and Tulane University, USA. Visiting faculty at universities in USA, Canada, Yugoslavia, Singapore and several institutions in India. Consulted for over 70 organizations in the area of Logistics and Supply Chain Management, and Infrastructure Development. Published over 25 papers and written over 100 case studies.


Recent studies include “Restructuring of NHAI” for the Planning Commission and the Inter-Ministerial Group, “A Diagnostic Study of Jawaharlal Nehru Port Trust” for the Ministry of Commerce, “Study on Accelerated Provisions of Rural Telecommunication Services” for the Department of Telecom (as part of a World Bank project), “Viability of Inland Water Transport in India” for the Department of Economic Affairs (as part of an ADB project), “Management Consulting Services for Reforms in Indian Railways” for CRISIL (as part of an ADB project), “Port Transportation Connectivity – India” for LEA Associates, “Interface between Port and Railways” and “Understanding Distribution Strategy and Providing Third Party Logistics” with Railway Staff College, Vadodara, “Logistics Infrastructure for Agricultural Exports” for IDFC. Recent management development programmes with external partnerships were for World Bank Institute (Frontiers in Infrastructure Financing), NHAI (Project Management and Induction) and IMTC (General Management for Shipping).