

How and under what conditions clients learn in system dynamics consulting engagements

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How you can help me today

- Thesis accepted May 2009
- Need to do some serious editing
 - Considering article for *System Dynamics Review* to present findings of interest
 - Thesis is 100,000 words; article is 6,000-7,000
- What is most interesting... if anything?
 - The research question
 - Concept of mental model in learning theory
 - Critical learning incident
 - Research methodology
 - Findings
 - Implications

What was done?

- “Why don’t they get it?”
- Reviewed theories of learning, choosing constructivist theory
- Looked at ‘conditions’ and concluded that common measurable condition is the emotional environment of intervention
- Personal reflection and interviews reasonably efficient means of gathering data from many engagements
- Interviewed subjects, transcribed voice to text, and organised data
- Reviewed and analysed data for common elements
- Discovered common elements and noted where technique or method led to improved results
- Summarised implications and suggest path for further research

Why this research was done?

- The research as a whole served three purposes
 - To provide the client with a better chance for an improved engagement outcome
 - To help others engaged in system dynamics consulting to improve effectiveness and efficiency
 - To help me better understand client learning
- Potentially large untapped reservoir of data in client engagements where SD most frequently applied
 - Observation that consultants haven't taken time to write down their experiences
 - This research could provide impetus and means to examine practice

3 Rs contributed to the research

- Reading
 - System dynamics, operational research, learning theory, consulting methods, intervention analysis, research methods, interviewing techniques, qualitative analysis
- Reflection
 - What did my experience suggest?
 - Why do clients engage consultants?
 - What constitutes a successful engagement?
 - Do clients learn?
- Research
 - Conducted personal reflections and initial interviews
 - Expanded analytical framework and questions
 - Transcribed interviews, analysed data
 - Compiled and organised responses to interview questions as responses to research questions, analysed data

Initial observations

- Consultants focus on engagement problem, not the clients
- Client-consultant relationships developed into 'research partnership' with consultant leading the research into engagement problem hypothesis
- Constructivist learning theory provided insight into and language for conversation about client learning
- Radical constructivism
 - Defined by individual as locus of learning
 - Learning the result of perturbation of one's mental model followed by assimilation or accommodation
 - Learning path determined in part by realism/idealism of client

Observations and findings

- **Clients had subject matter knowledge before the engagement and learnt policy design**
 - Client interviews indicated strong post-engagement understanding of policy, even when they did not use the specific term
 - Critical learning incident often associated with discovery of policy structure and likelihood of conflicting policy goals
- **Critical learning incidents occurred in conceptualisation, confidence-building and implementation, with little distinction in methods employed by consultant**
- **Clients reify either model type—Policy-testing (prescriptive) and predictive (forecasting)—providing client learning needs are met**
 - Predictive models fulfil ‘realist’ needs and explain reference modes point for point
 - Policy-testing models fulfil ‘idealist’ needs and explain system of problem coherently

Observations and findings (continued)

- **Clients and consultants reported some differences in intervention conditions and effects on client learning**
 - Clients assessed learning conditions as mostly catalytic (helping the client to become increasingly self-reliant and reflective) whilst Consultants reported
 - CLI occurred in resolving organisation disagreements, often under pressured circumstances
- **Consultants and clients disagreed in assessment of time allocations**
 - The essential insight was to propagate findings earlier, reporting more frequently to the larger organisation
- **Pattern of learning, measured first as CLI, indicates policy model engagements tend to produce CLI earlier and predictive model engagements tend to produce CLI as tight fits of simulation results to measured data are obtained**
 - Clients learned some principles of systems, such as effect of time delays and feedbacks, but did not learn 'system dynamics methodology'

Observations and findings (continued)

- Engagement ‘success’ outcomes depended on whether the original intent was met and resolved a disagreement in the organisation
 - When learning to solve a problem with SD was intended, ‘success’ depended on ending results, which may depend on the experience of the consultant (too little data to conclude)
 - Clients oriented to results—did the engagement produce the desired result?
- Engagement learning outcomes were explained by constructivist principles
 - Perturbation—Assimilation—Accommodation
 - Real world situation
 - Model-based simulation reified when client (learner) related model directly to experience

Observations and findings (continued)

- Client learning is a construction process
 - System dynamics methodology provided construction plan, and experiences—accumulated and by simulation—provided construction material
 - Clients approached construction process differently
 - Some approved the plan first and found the material (idealists)
 - Some approved the material first and followed the plan (realists)
 - Clients need deep and continuous sensemaking (experience and reflection) to learn
 - Explanation helps organise thinking
 - Consultant contributes to construction planning and direction
 - Focus on problem-solving may miss opportunity
 - Reliance on methodology—what has worked in the past—short-changes client uniqueness
 - Yield authority as engagement progresses or client learning cannot flourish

Observations and findings (continued)

- In most cases clients develop better understanding of time delays and feedbacks but do not ‘learn system dynamics’
 - Claim of changed worldview reinforced by client reports of post-engagement learning.
 - However, this result is materially overstated by the self-selection for participation in study.
- Some evidence of transformative learning
 - Exceptional case of deeper need to ‘know in a different way’, to change one’s worldview to be more inclusive and able to make sense of complex relationships
 - Study data suggest transformative learning at work but evidence of ‘disorienting dilemma’ is unclear or not there
 - Transformative learning tends to be time-consuming and consultants must be aware of exceptional client need to learn

What are the implications?

- Original vision for SD—learning through simulated experience—is realised through consulting interventions rather than managers developing hypotheses and making simulation models to test hypotheses for themselves
- Understanding each participant as unique and idiosyncratic helps consultant to bolster weaknesses and build on strengths
- Conceptualisation models should relate to organisation and engagement issues
- Consultant and client relationship should be research partnership more than master-apprentice with client assuming more authority as engagement progresses
- Clients approach new perspectives differently and have different learning needs to be addressed in the engagement
- Socialisation of *knowledge claims* within the organisation confirms and disconfirms usefulness of elemental claims
- Post-engagement reflection and client interviews re-present the engagement experience as a dynamic plot with a mystery and learning to solve the mystery as the consequence

Limitations of research methodology

- Analysis and results biased by researcher experience
- Results not readily generalisable: proportions distorted by selection bias; case study with limited data from self-selected participants
- Nuanced differences in cases and clients filtered in coding and categorisation processes
- Unwieldy datasets: no two datasets identical, large amount of discrete data

Future research

- Studying the phenomena and testing implications in larger, controlled studies would build confidence or help disconfirm findings.
- Studies of frequency, depth, and breadth of client presentations to other members of the organisation would help find maximum learning benefit
- The study suggests categorisation of clients on a continuum from realist to idealist in establishing how clients learn...the starting point.
 - A study to determine an index of approach could simplify categorisation and understanding.
- Broader application, perhaps with an edited set of assessment queries, would add data from a broader sample of study participants.
- Radical constructivism focuses on individual learners and social constructivist principles may help detect and explain group phenomena.

QUESTIONS?

THANK YOU!

Implications

- Formative assessment
 - Most evaluations in engagements focused on what was needed by consultant to solve the problem (develop or test the simulation model)
 - Pre-engagement assessment of client foundation for learning acknowledges uniqueness of client (individuality and idiosyncrasy of learning)
 - Post-engagement assessment can be effective in confirming *knowledge claims* made by client
- Provides coherent and cogent definition of ‘mental model’ drawn from learning theory: a construct of thought used to make sense of one’s experiences
 - Commensurate with use of term in system dynamics literature
 - Opens a rich resource for developing effective consulting tools
- Adds ‘individual as locus of learning’ dimension to SD and OR lit that centres on group learning
 - Contributes concreteness to organisational learning lit
 - Cross-case analysis provides colourable explanation of recurrent phenomena

Implications (continued)

- Demonstrates value of reflection through researcher and other consultants' reflections on engagement experience through lens of client learning
- Adds practice-based results to controlled classroom investigations of dynamic problem-solving capacity
- Proposes explanation for categorical differences in client problem-solving orientation
 - Realism \leftrightarrow Idealism
- Demonstrates intervention category analysis as useful approach to understanding conditions of client learning

Dissemination of results

Principal

- European Journal of Operational Research
- Journal of Management Consulting
- Journal of Systems Research and Behavioural Science
- Journal of the Operational Research Society
- Journal of Practical Consulting
- Management Science
- Operations Research
- System Dynamics Review
- Systems Research and Behavioral Science

Secondary

- Academy of Management Journal
- Academy of Management Review
- Administrative Science Quarterly
- California Management Review
- Emergence: A Journal of Complexity Issues in Organization and Management
- International Studies of Organization and Management
- Journal of Management
- Journal of Management Studies
- Journal of Organizational Behavior
- Journal of Organizational Change
- Management Organization Science
- Organization Studies
- Sloan Management Review
- Strategic Management Journal
- Conferences organised by publications' societies and associations