

Standardisation, Innovation and Learning in the Workplace: Missions in complexity reduction

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Abstract:

The proliferation of transnational workplace sites has strengthened the demands for consistent standards of practice and operation. These are increasingly applied and regulated internationally through technologies such as ISO 9000. Workplace learning programs have been designed to reduce variation in skills and procedures at the local level, and to increase individuals' compliance with regulatory manuals, audit forms, error reports etc. Yet at the same time, a key emphasis for organizations attempting to survive amidst global competition is to increase innovation across different units and different operation levels. This push for innovation has been coupled with ideals of a learning organization wherein all employees are supposed to learn continuously, e.g. to increase variation. This paper explores the organizational tension between centrally imposed demands for both standardized practice and innovative challenges to existing standards that often produces complete separation of design and execution functions, sometimes into sites located in different countries. It shows how in practice, workers continue to experiment and learn in ways that deliberately subvert reductionist standards measures, or that produce local innovations that are unrecognized by these measures.

Duelling desires for workplace learning: complexity and consistency

Workplace learning and training has, since the late 1980s, been profoundly affected by two concepts: *continuous learning* and *total quality*. These two notions were commonly spoken in the same breath, and enjoyed rapid uptake and wide proliferation through communities of managers, trainers and developers, and government policy-makers. Their uptake was related to a convergence of factors whose story, while interesting, is not particularly relevant here. What is interesting for questions of complexity and education is that the mantra of 'continuous learning' often promoted emergence and complexity, sometimes explicitly, while 'total quality' concepts promoted opposing assumptions rooted in measurement, predictability, and consistency.

Total Quality Management (TQM), loosely derived from Japanese management strategies, transformed business and government in the late 1980s. The central principle was to ensure *consistent* quality in all aspects of production, service and routines according to standards of excellence, by continuously improving performance and eliminating waste and defects (Deming, 1986). A major aim was to reduce variation from every process to achieve the greatest possible consistency of effort (Oakland, 1989). To this end, quality assurance was calibrated according to elaborate systems of standards, most notably the ISO 9000 series (International Organization of Standardization) – now into new generations of specific standards that control sectors from manufacturing to education in activities from machine calibration to human communication. These standards are largely regulated through texts and training, using detailed manuals specifying performance standards, and corresponding systems of control wielded through written forms tracking and reporting levels of compliance.

But beginning in the early 1990s, a new injunction appeared for workplaces to recreate themselves as 'learning organizations'. Some traced this turn to the publication of Peter Senge's *The Fifth Discipline* (1991) which was received as a manifesto across boardrooms, government

departments, and management studies. The new objective for educative interventions in the workplace was described as promoting workers' continuous learning through: inquiry and dialogue, team collaboration, open systems that enabled multiple feedback loops and connections across boundaries, and creative experimentation to promote variation and innovation at all levels (Watkins and Marsick, 1993). These injunctions appear to be aligned with descriptions of complex adaptive systems, and resonate with Davis's (2004) list of system elements that can promote emergence in educational environments: diversity, interaction, redundancy, decentralized control, liberated constraints, and feedback. In fact, Senge (1991) claimed complexity theory as the roots for his 'disciplines' that form a learning organization, such as 'systems thinking' whereby workers come to understand their fundamental interconnectivity, view their actions in terms of the system, and think of their work as continuous adaptation.

Towards innovation and control

These two notions have been adapted and translated through practices and prescriptions for workplace learning over the past two decades, and new energies have come to influence this tension between desires for both unpredictable emergence and ordered consistency. It is fair to observe that both continuous learning and total quality/international standards have become mobilized as powerful rhetorical and material forces. Not surprisingly, their effects on workplace learning and training reflect their mutual positionings: complementing, contradicting, competing and reacting to one another. And as an interesting side note, proponents of 'continuous learning', 'total quality' and ISO in the workplace did not take long to adapt their prescriptions specifically for public education (Horine and Lindgren, 1994; Senge et al. 2000).

'Continuous learning' as a directive for emergence has come to engender some suspicion among workers and trainers with its many implicit contradictions and disregard for the politics of labour process and organizational productivity (Fenwick, 1998), its 'silent' forms of regulation (Schied et al., 2001), and the exclusions created through continuous and team-based learning (Mojab and Gorman, 2003). However in the emergence of hyper global competition and rapidly changing technologies and consumption patterns, policy emphasis on continuous learning has increased at all organizational levels, particularly for innovation. As McGrath (2001) argues, in our current environments of greatest uncertainty, innovative learning holds greatest importance: 'those organisations that prove to have superior abilities to manage exploration will be better able to adapt to changing circumstances' (p. 119). Federal policy in Canada mobilized an 'innovation strategy' (HRDC, 2002) promoting training that developed flexible, creative, adaptive workers that learn continuously. Writers advance theories about the processes of innovative learning, seeking ways of removing so-called barriers to innovation, and encouraging workers' experimentation, risk-taking, and variance-seeking (Crossan et al., 1999). In fact, much of the writing about workplace learning for innovation draws explicitly from complexity theory, to promote 'complex responsive processes', 'deviance', non-linear dynamics, self-organisation and emergence (e.g. Stacey, 2001).

'Total quality' has somewhat faded in explicit citation since its peak in 1992-1996, although organizational researchers show its continued influence on management and training approaches. The international standardization movement, on the other hand, has continued to grow, seeking 'global solutions to satisfy industry and customers worldwide' (ISO, 2008) by specifying standards (over 16,500 to date) to regulate every aspect of workplace production and relations.

This growth is fed partly by the status achieved by an organization that attains ‘ISO certification’, and partly by transnational corporate concern to guarantee product consistency across distributed production and design sites. Training across these different sites becomes a particular challenge when the objective is to eliminate variation. While motivated by the same concerns for competitive advantage driving the innovation proponents, the ISO movement appears to strive for objectives directly opposing the conditions promoted for innovation and innovative learning: to reduce complexity, unpredictability, and ensure consistent ‘quality’ and efficiency across international sites and diverse contexts.

What happens in learning activity at the worksite

These two concurrent concerns in workplace learning for innovation and for standardisation or, we might say, for encouraging while reducing complexity, play out an interesting balance at local sites of workplace activities. The following examples illustrate ways that complexity reduction in training and learning is attempted, and the different effects achieved.

Textual regulation and workers’ subterfuge

In a textile production plant described by Belfiore et al. (2004), workers were trained in a new ISO-regulated system that increased production quotas and imposed more efficient, consistent procedures. Non-compliance report (NCR) forms were one of the many new textual activities introduced to regulate this complexity reduction. However as researchers observed, workers had learned to be very careful about how and with whom they wrote up “incidents” where ISO standards were not met, for these reports required the assignation of blame or at least figuring out the cause of a complex problem. Workers also were caught between the time-consuming form filling process and supervisors’ urges to hurry production. They often simply circumvented the form and masked the issue. Self-protection, solidarity and small revenges all were played out at the site of the NCR form. When managers became aware of what was viewed as worker non-compliance with the form procedures, the problem was interpreted to be a gap in worker knowledge: training in the NCR was prescribed. It is unlikely that this training would have ensured the desired complexity reduction, given that the workers’ adaptations were about sustaining the existing social system and negotiating the material conflicts embedded in the new production process.

Improvements as deviance

Call center workers, reports Mirchandani (2004), are trained not only to follow standardized telephone protocols, but are also to adopt accents and first names that are consistent with the country to which they will be providing service – a challenge when trainees are geographically separated such as callers in Bangor India learning to serve the southern USA. The educational challenges are further complicated when standardized disciplines must hold across disparate regions and cultures, as when trainers located in Melbourne Australia are teaching the learners in Bangor to serve Atlanta Georgia (Farrell, 2006). Call centers are notorious for close, constant supervision and even punishment to ensure worker compliance with the protocols. However, as Mirchandani reports, workers seem infinitely motivated and capable of producing variations on this protocol. One example occurred over a market survey of breakfast cereal. The callers were supposed to use a script that began asking who in the household ate breakfast cereal,

then questioned the brands of breakfast cereal used. But as the callers quickly found, customers tried to explain the details of who ate what cereals in ways that the survey could not manage. So after some further experiments, one worker created variations to the script that allowed for these unanticipated responses. The supervisor disciplined the worker and the original script was reinstated. We don't know whether workers continued to use their own variations in this case or whether some simply quit in frustration (there is high employee turnover reported in call centers). The point is that just as with the NPR form, a text in different social contexts prompts unanticipated things to emerge which challenges the standard, and even when further discipline is imposed to close this complexity, these feedback loops, something new is emerging. The protocol has failed to capture the correct data, the worker has seen the failure of the standard and the success of the invention, and the fragility of the measure to control the standardization has been exposed.

Variation to maintain the system

Another story told by Belfiore et al (2004) follows hotel workers through their education in "total quality" customer service. Front staff were trained to interact with hotel guests using standardized protocols, but to management's frustration the workers routinely altered the protocols because they believed guests were more satisfied with personal, human communication. And because the computer systems organizing front staff's records were constantly changing with the new implementation, workers informally developed and shared shortcuts together to get on with their everyday tasks. Housecleaning staff were also required to use standardized forms which supervisors cross-checked through more lengthy paper-based procedures, but the workers kept adapting the forms so they could document as quickly as possible what they determined to be the key issues of room standards. These women had formed close local ethnic groups bound by a shared 'housekeepers' culture, holding pride and skill in high quality cleaning, and effective systems for controlling their own work. One group adopted a system of dots that was dismissed as meaningless by the Floor Manager, but was difficult to eliminate. Overall, the new standardized procedures and texts actually appeared to prompt invention as the hotel workers spontaneously adapted them to maintain their own social system and their collective sense of what comprises 'quality' work.

Discussion and Conclusion

In these three examples, workplace education was focused upon implementing an innovation for new practice, i.e. to improve productivity and quality, in the form of predictable standardized protocols that hold over time and space. While discourses of continuous learning are still espoused in these workplaces using rhetoric of complexity and emergence, the practical objective - particularly for line workers - is clearly complexity reduction, i.e., "limiting the number of possible variables and reducing the 'recursivity' of the system: trying to push the system from an open to a closed state and trying to reduce the impact of 'feedback loops'" (Osberg and Biesta, n.d.). Complexity reduction is attempted through a variety of educative disciplinary measures to ensure workers' compliance with standards: formal training, regulatory texts, supervision and assessment.

Leaving aside the ironies and conflicts evident in the thinking around innovation here, the challenges of eliminating variation and recursivity throughout the system are exacerbated by separations of scale and distance. Conception and rationale for the standards are separated from their execution, instruction is separated from activity, regulatory bodies are separated geographically from working bodies. In each workplace example here, workers learned and even tried to apply the technologies of standardization. To this extent, the education was successful in achieving complexity reduction: framing problems of practice in particular ways, conscripting particular behaviours, formulating particular worker subjectivities and mobilizing particular processes and divisions of labour.

However, diverse complexities of each local context of implementation created disjunctions with the rigidity of the texts and protocols. Workers struggled to navigate the new texts amidst conflicting procedures, multiple interpretations of what counted as job quality, positional politics embedded in new technologies, and faulty tools. There is always the unanticipated customer response, the emerging interaction, and the clash of texts with material activity. Individuals who are healthy and unafraid seem to invent spontaneously to make things work within existing local systems of social relations and activity networks, and in doing so, continuously introduce variation. Explicit attempts to eliminate this variation through further worker training or by forcing behavioural compliance seems only to amplify the complexity. The question for those intent upon reducing complexity to impose a-contextual standards might then be: what range of variation is tolerable in different parts of the system that will still ensure acceptable overall outcomes?

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