

Systems Thinking Competencies and the Learning Organisation

Keith T Linard ¹ and Beate Aretz ²

¹ Senior Lecturer, University of New South Wales, AUSTRALIA
(Australian Defence Force Academy)
k-linard@adfa.edu.au

² Research Student, University of New South Wales, AUSTRALIA
(Australian Defence Force Academy)
b-aretz@adfa.edu.au

ABSTRACT: *Public and private sector managers are starting to talk of ‘systems thinking’ as one of the key business competencies of their staff. At the same time, training managers in some enterprises, including the Defence Organisation, are demanding that University management schools introduce a more structured ‘competency based’ approach. But what are ‘systems thinking competencies’? Is “competency based” education and training an appropriate approach to achieving them?*

Competency based education is the norm in technical and further education, and competency frameworks have been accepted by professional bodies such as the Institution of Engineers Australia and the Australian Institute of Project Management. The University sector has been less than willing to embrace this paradigm. This paper seeks to foster debate on the competencies required for a system dynamics professional and on the education and training framework to achieve them. Existing business core competencies are analysed and compared with the characteristics identified by Peter Senge in an ideal ‘Learning Organisation’ (Senge 1990).

Keywords: Systems thinking, competency, competency based training, learning organisation

INTRODUCTION

This paper has its origins in a wider review of the ‘learning organisation’, and from a recognition that this concept, popularised by Peter Senge’s seminal work, *The Fifth Discipline* (Senge 1990), is subject to widely differing interpretations by different disciplines. In fact, Senge’s so called “fifth discipline”, systems thinking, which is the cornerstone of the thesis advanced in his book, is absent from much of the professional literature and practice amongst HR, organisation design and training practitioners.

The paper notes a similar looseness across disciplines in the understanding of competency. From research on “business core competencies” it seeks to identify whether it is possible to identify *competencies* that facilitate the development of a learning organisation. It then examines whether the widespread “competency based training framework” (CBT), whatever its value in skills acquisition, can be a route to developing a learning organisation.

DEFINING “COMPETENCY”

Our first problem lies with the word “competency”. Notwithstanding its widespread use in the technical and further education field, there is no one common definition of the term “competency”. Different disciplines and different contexts generate a variety of understandings. For educators and trainers, competencies typically refer to specified skills, knowledge, attitudes and behaviour that are of central importance to undertaking effectively a given task, activity, or career.

Competency Standard: Facilitate individual and group learning	
Competency Element	Competency Performance Criteria
1. Select appropriate teaching and learning strategies	1. Accurate and relevant information on the individuals’ current competencies and learning needs are obtained. 2. ...

Figure 1: Illustration of Specification of Competencies for Vocational Teacher

“Competency comprises the specification of knowledge and skill and the application of that knowledge and skill to the standard of performance required in the workplace. The concept focuses on what is expected of an employee in the workplace rather than on the learning process and embodies the ability to transfer and apply skills and knowledge to new situations and environments. This is a broad concept of competency in that all aspects of work performance ... are included.” (Queensland Industry Training Council 2000).

Within the HR discipline, competencies typically refer to “... *an underlying characteristic of a person which enables them to deliver superior performance in a given job, role or situation.*” (Marshall, 1996) The “HR Competency Model” of the International Personnel Management Association (IPMA) falls into this category.

Knows Business System Thinking: *Applies whole systems thinking to HR processes by ensuring consideration of all external and internal environmental factors in providing advice and solutions to customers.*

Possesses the Ability to Build Trust Relationships: *Has integrity and demonstrates professional behavior to gain the trust and confidence of customer. Follows up on commitments made on a timely, accurate and complete basis. Can keep confidences ...*

Figure 2: Two of IPMA's 22 Identified HR Competencies

Organisation Design (OD) literature embraces many definitions, including the concept of “business core competency” which is of most relevance to this paper. “*Organizational competencies are underlying process routines that allow the combination of skills, systems, assets, and values, to result in predictable high-level performance of tasks ... yield an advantage over competitors, and provide valued functionalities for customers. Competencies are thus integrative task performance routines that combine resources (skills and knowledge, assets and processes, tangible and intangible) to result in superior competitive positions*” (Doz 1997).

Business Core Competencies

The OD literature identifies many characteristics of such core competencies, albeit with robust debate. The received wisdom ranges from the assumption that business core competencies can be specified, detected and developed, to the position that they are difficult to specify and that it is well nigh impossible to develop them intentionally. Nevertheless, there is a significant degree of agreement on many of their attributes.

The left hand column of Table 1 provides a summary from this diverse literature of the suggested attributes of business core competencies. (Sources are omitted but are provided in an expanded version of the paper.) We present them to illustrate the parallels (right column) with Peter Senge’s “learning organisation” concept.

Table 1: Comparison of Business Competency Literature with Senge's Learning Organisation Vision

Attributes of	Parallels to & Contrasts with
<i>Business Core Competencies ...</i>	<i>Senge's Learning Organisation ...</i>
... provide a basis of competitive advantage, which is important for the growth, renewing and reshaping process of an organisation	... is a place where people continually expand their capacity to create the results they truly desire
... are the engine for new business development	... is a place where new and expansive patterns of thinking are nurtured
... are hard to imitate, because they embody an accumulation of tacit knowledge	... will look different in each organisation, because it is made up of the individuals
... are difficult to introduce to a business and make it work to the benefit of the organisation	... its development is a difficult process, it is the change of the organisational culture
... have to steer the power structure in the company and drive all major decisions	... steers the culture of the organisation, which then does not exclude the decision making process
... have to be chosen by the CEO only, not by other authorities throughout the organisation	... does not have to be chosen necessarily by the CEO, but it does need any support available
... takes long time to introduce to the organisation	... take long time to be introduced
... it is difficult to measure their effect on the performance, seeing them as isolated factors	... and its benefits may be very obvious, but also very hidden, depending of the grade of the development
... are a property of the firm as a whole rather than of any one part of it	... is ideally the property of each employee and more are involved more effective it will be
... involve many levels of people and all functions	... demands to be active on any level of the organisation, of the department or the group

... are the glue that binds existing business	... involves promotion of a Shared Vision ... creates a strong bond throughout the whole of the organisation
... deliver an identifiable functionality of benefit to a customer that he or she is willing to pay for	... favours and trains Systems Thinking, a valuable tool for problem solving and innovation
... enhance as they are applied, used and shared	... will grow in its capabilities the longer and more intensive it is practised
... are a combination of complementary skills and knowledge bases embedded in a group or a team	... believes in two facts: that the organisation can only learn when the individual learns; and that Group Learning is one of the five main disciplines
... has as a common source the individual, developing expertise, learning has as sources the individuals who are learning and developing Personal Mastery, as well as Group Learning
... can be as well collective, developed through small group learning	... relies on Group Learning and a Shared Vision to be created, as a common source of community
... are constituted by skills around people	... is always linked to people, it is not a superstructure to apply without relationship to people
... are the result of a learning process	... can be only the result of a learning process
... are the collective learning in the organisation	... encourages collective learning and promotes it through the discipline of Group Learning
... are Engagement	... demands a very high level of commitment, at least for a group of people concerned with its development
... are Development	... focuses on the development, individual and organisational
... are Performance Management	... leads to a very defined management focus and provides a long term view
... can be personal	... can start from one person
... can be corporate	... and from there can spread over the whole of the organisation
... are weaker if relying on individuals	... with its Shared Vision, aims for the involvement of as many people as possible
... are stronger if rooted in the corporation	... aims for the whole of the organisation
... are developed through the learning of individuals, groups or the whole of the organisation	... has to happen within individuals and groups and further the whole of the organisation
... are manifested through action	... will manifest itself through action – institutionalised as well as individual / voluntary
... must impact positively on the organisation's revenue, otherwise it is a real competence	... will have its positive effects, also in terms of revenue, in a broader sense (less staff turnover, etc.)

From this comparison, one could argue that Senge's concept of Learning Organisation is a good working definition of a Business Core Competency framework. In this light, Senge's "five disciplines" would be the constituent competencies which enable the development, nurturing and sustaining of the more technical skill and knowledge oriented competencies.

Human Resources Competencies

Traditionally the HR task had an intrinsic interest in identifying competencies in employees and matching these with the organisation's needs. Task analyses matched with staff personal competencies formed the basis of this. In recent years there has been the start of a mindshift, influenced by psychological research and employer feedback, and a recognition that test results do not necessarily demonstrate the ability to perform the job (Marshall 1996).

Personal competencies, as typically defined, may be divided in different groups (skills, knowledge, attitudes, behaviour). The first two (skills and knowledge) are easier to train and develop, but "attitudes" and "behaviour" are much more difficult to inculcate. The latter competencies develop over a longer span of time and are, so to

speak, *below the surface*. But they are the very ones identified by researchers and employers with the greatest potential to engender superior performance in management and in addressing strategic issues.

What is the relevance of the foregoing for a “Learning Organisation competency framework”? The competencies needed to be able to develop a Learning Organisation, the five disciplines as described by Senge, have much more in common with the “*sub surface*” competencies. Such competencies:

- are not easy to “train”
- can only be developed over an extended period of time
- are hard to assess.

This throws light on the consequences of the all too common practice of rewarding high performance in certain technical skills (for example in law or teaching) with the promotion to management. Crossing the boundary from the technical to managerial requires a new set of competencies which are predominantly in the attitudinal and behavioural field. There is no *prima facie* case for arguing that superiority in technical skills and knowledge has any bearing on competencies in these more qualitative but crucial areas.

Clearly, HR managers face a challenge, how best to nurture sub surface competencies which are the essence of the Learning Organisation. Since many public and private sector management courses are starting to be designed in competency based training (CBT) terms, we must ask whether this framework holds the answer.

Competency Based Training

CBT is a pervasive paradigm throughout the developed world. In Australia it underpins the vocational education and training sector under the aegis of the “Australian National Training Framework” (ANTF). “*A CBT system is primarily concerned with ensuring workers are equipped with the skills needed by industry. (CBT) is concerned with what a person can do as a result of training ... (it) focuses on the skills and knowledge an individual has ... The concept of competency focuses on workplace expectations rather than on the actual learning process. It refers to skills and knowledge that can be transferred and applied to new situations ...*” (ANTA 1998).

The key elements of the ANTF competency based training system are that it

- is based directly on the skills and abilities required to do a job;
- takes account of learners' existing level of competency, irrespective of how it was acquired;
- allows learners to enter and exit training programs at various stages, with statements of competence;
- suits the learner's pace and style of learning;
- allows training to take place in a variety of settings including workplaces, simulated work environments, and training rooms;
- allows learners to be assessed when they are ready.

The CBT approach has much to commend it. In particular CBT:

- is concerned with what a person can do as a result of training rather than (as for example with past apprenticeship systems) the time spent in training;
- focuses on the skills and knowledge an individual has, rather than on how they attained them (whether training is undertaken in a classroom college, workshop, in the workplace or a combination);
- takes into account what an individual already knows, irrespective of how the knowledge and skills were gained (compared with University qualifications, for example, which demand a given number of courses be taken irrespective of the prior knowledge ... except for the ultimate ‘competency award’, the honorary doctorate).

However, there are indications that CBT fails especially in areas most relevant to Learning Organisation competencies. A recent report on employer satisfaction with graduate skills released by the Federal Minister for Education, Dr Kemp, is the latest in a string of research reports, which find CBT, lacking (DETYA 2000). The following comments relate especially to the CBT based TAFE sector than to other areas of post-secondary education.

"A large proportion of applicants for positions are considered to be unsuitable ...; overall this unsuitable proportion was 76.5 per cent...."

"Taking into account the relative importance of the skills to employers, the greatest skill deficiencies among new graduates were perceived to be in the areas of:

- *creativity and flair;*
- *problem solving.*

"Creativity and flair were the most important of all the skills tested, yet they received only a relatively mediocre performance rating (3.5 out of 5.0 for the last graduate employed, lower for the rest of the applicants)..."

"Several of the highest rating (CBT) skills were not at all important to employers, particularly customer focus and the ability to benefit from on-the-job training."

"The skill deficiencies most commonly cited by employers themselves are:

- *a lack of interpersonal skills; and*
- *a lack of understanding of business practice.*

Consistent with these employer critiques, an academic study by Macfarlane and Lomas (1994) directly contrasted the shortcomings of the CBT framework with characteristics needed by the Learning Organisation.

Competence Curriculum	Learning Organization
Addresses current practice	Addresses future practice
Bounded knowledge	Unbounded knowledge
Promotes conformity	Promotes debate
Inward focus	Outward focus
Discourages reflection	Encourages reflection
Control	Empowerment

More fundamentally, one could argue that CBT in its very concept is anti-systemic in that it arrives at the competency specification through an exaggerated focus on disaggregation into component parts. (For example, the National Training Authority's CBT standard for Community Service encapsulates competence in this field through some 1,150 competency elements, each of which has a number of performance indicators). It is axiomatic to a systems thinker that the whole is greater than the sum of the individual parts, and that we cannot understand the emergent property of a Community Service Worker simply by understanding the totality of its component elements. We argue that only an holistic approach to education can adequately address the "sub-surface" competencies of the Learning Organisation associated with attitudes and behaviour.

THE "IMPOSSIBLE" DREAM?

The core competencies suggested by Strümpfer and Ryan (1994) to inculcate systems thinking formed the basis of designing the postgraduate course in System Dynamics at the Australian Defence Force Academy. They were found to be a useful foundation which, as illustrated below, is consistent with Senge's Learning Organisation.

Learning Organisation	Systems Thinking Competencies – Summary (Strümpfer & Ryan 1994)
<i>Personal Mastery</i> – Compassion: we can't find the fault in the other	Belief in consultant/client relationship not as expert/unenlightened relationship; but as equals in the process of inquiry
<i>Personal Mastery</i> – to continually clarify what is important to us – to see current reality more clearly	Diagnosis - explains situations in terms of systems world view
<i>Personal Vision</i> – to picture desired future	Prognosis - forms anticipation of the future unfolding of the situation
<i>System Thinking</i> – seeing interrelationships, rather than linear cause effect chains	Treatment - applies systems methodology to formulate a situation specific method of attack.
<i>Systems Thinking</i> – seeing interrelationships, rather than linear cause-effect chains	belief in inseparableness and interdependence of consultant/researcher/problem solver
<i>Systems Thinking</i> – seeing patterns of change, not just static snapshots	belief in solutions as open ended processes; and not as structural prescriptions (snap-shot view vs. motion picture view of problems/situations)
<i>Systems Thinking</i> - "the primacy of the whole"	Evaluation - sees/perceives/interprets situations in terms of systems world view

<i>Team Learning</i> – Dialogue	Listens and hears what others say
<i>Team Learning</i> – Dialogue: free exploration into an issue	One-on-one feedback
<i>Team Learning</i> - Discussion	Questioning ability - prompts/probes & keeps conversation alive
<i>Team Learning</i> – understand how to complement one and an others effort	Views of her / him self as learning facilitator and not solution discoverer.

In order to emphasise the “sub-surface” competencies, the bulk of the assessment in the ADFA program is through team projects, with significant peer and personal self assessment based on holistic guidelines such as:

Team Skills:

- Treated each client and team member with equal respect recognising that each has innate value
- Valued everyone equally regardless of rank or status – every component of the team is important
- Took the initiative in serving the team – contributed ideas positively but was prepared to let them go
- Treated others as s/he expected to be treated (contributed fairly, undertook agreed tasks etc)
- Listened actively and tried to understand the others viewpoint
- Accepted difficult relationships as one’s own problem, not ‘their’ problem, and valued the differences
- Put the interests of other team members first so as to build community
- Took responsibility for her/his own actions and was prepared to put the team’s interests first

The switch to emphasise this focus on systemic attitudes and behaviour from what was virtually a total technical skills and knowledge focus has seen a dramatic improvement in the technical competence of the student products. Analysis of this experiment from a subject and student perspective will be the subject of a later paper.

CONCLUSION

Cross disciplinary discourse in this field is difficult because both the “Learning Organisation” and “competencies” are subject to great diversity in definitions, often contradictory. We focus on Senge’s concept of the Learning Organisation, which is underpinned by systems thinking. The attributes of this particular *Learning Organisation* map closely to findings on business core competencies from across the field of OD research.

From research in the HR field, the very competencies which are the essence of Senge’s five disciplines, are essentially internalised traits and difficult to inculcate. Timely feedback from employers suggests that it is especially in these areas that competency based training is failing, whilst more holistic education fares better. These factors suggest that CBT is not the way to go. Nevertheless identification of Learning Organisation competencies, and integrating these holistically into an education framework can be successful.

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