

***Business & Education:
Some Uncommon Sense About
Learning***

*High-performing employees are no
different than gifted students, nor are the
approaches for creating them*

by Carol Sanford

When the “Johnnie Can’t Read” stories began attracting national attention in the United States during the 1970’s, the educational “crisis” was seen to be primarily the problem of professional educators and parents. It was almost another decade before expressions of concern began to creep into the business press. Escalating portions of training budgets devoted to remedial skills were the first warning signs. The greatest concern, however, was evoked by a

gradually dawning realization that, even if the “basics” were well taught, traditional education systems were still producing workers who were ill-equipped to deal with the increasingly complex demands of work in the 1980’s, let alone the 90’s and beyond. As increasing numbers of businesses move toward team-based structures and delegated leadership and decision making, this concern has launched a widening search — in the schools and at the workplace — for more successful ways to prepare people for modern business.

Two independent, yet fundamentally similar, efforts — a ground-breaking eight-year-old educational research and development project, and a thirty-year-old approach to organization development — offer valuable insights

into what those ways might look like. As a means of understanding what they have to offer, we examine here the fundamental principles which these two independent efforts share, and the results of their application, both in schools and in the workplace.

DEVELOPMENT WITHIN BUSINESS. In the early 1960's, an international consumer products company based in Cincinnati, Ohio, initiated what has become the foundational effort for many new approaches to work redesign, in manufacturing as well as other functions. Originally labeled a socio-technical system (or Technician System, by some) because of the attempts to reintegrate the social aspects of the workplace with the technical aspects, it has evolved over the last thirty years into a highly

sophisticated and wholistic organizational effectiveness technology which is being used by businesses around the world to develop increasingly complex and sophisticated organizational and individual capabilities. The approach in its current form is now more accurately referred to as Developmental Organization Technology, since it encompasses much more than the original social and technical elements.

DEVELOPMENT WITHIN EDUCATION.

Approximately eight years ago, a research and development project was funded at the University of Arizona, College of Education, to explore and develop a radically different approach to public education in the United States. Since its founding, the HOTS Project (Higher Order Thinking Skills) has

involved schools in thirty-three states, and over 5000 students. Documented results include an extraordinary increase in basic skills and self esteem, as well as a capability and motivation to respond to complex and difficult situations far exceeding average students.

One of the frequently noted aspects of Developmental Organization Technology is its success in creating self-sustaining business environments which promote continuous development of the production process, of the product produced, and of all of the people involved in that process. Although completely independent of Developmental Organization Technology, the HOTS Project was built upon, and attributes its success to, many of the same development principles and concepts as the Developmental

Organization Technology. Because of this fundamental parallelism, the extensive documentation and evaluations of the HOTS Project successes in the schools helps to shed light on the reasons why Developmental Organization Technology has been so successful in developing people in businesses, as well as providing guidance for future development efforts, both in the workplace and at school. This paper describes the shared underlying structures and principles that are necessary to create a major organizational transformation of the magnitude of the changes achieved in the HOTS program

HOTS PROJECT RESULTS¹. At a time

Pogrow. Dr. Stanley, "Solving the at-risk problem by Intellectually challenging Students", Phi Delta Kappan, Fall 1989.

when falling test scores continue to dominate the news coming from the world of education, the results posted by schools using the HOTS approach are even more remarkable, particularly in view of the fact that most of students entering the HOTS program are considered to be remedial or at-risk students:

1. Ten percent (10%) of the students were reclassified as gifted at the end of one year, and thirty-six percent (36%) had made and retained a position on the school Honor Roll.

2. Of the four students ranked as the top academic learners in one school, two were HOTS participants who had come from the bottom of the class to be included in the top ranks.

3. Participating students gained an average of 15% on standardized reading and math tests in one year, or 67% above the national average in reading and 123% above the national average in math. The second year results continued to exceed national averages and competency continues to accelerate.

4. Twenty percent (20%) of eleven and twelve year-olds in the program tested beyond the 18-year-old level. Fifty percent were above their age level (based on national averages), 90% in the first year.

5. Significant improvement in every student's self-concept was noted: they report feeling increasing confidence to succeed at levels significantly beyond those which they originally felt capable of

achieving.

6. A tough inner city school, after one year, no longer had any discipline problems with any of the students in the program.

Given these impressive and well documented results, one would assume that school districts and educational institutions would be racing to integrate this approach into their systems. One would assume that businesses would also rush to integrate this approach into their learning processes, given what these statistics could translate to in the work world (e.g. a workforce increasing its capability at a rate from 67-123% faster than the competition; half of the major promotions into new challenging positions coming from people considered un-promotable or “topped out”; workers

formerly considered discipline problems becoming fascinated, committed, and self-disciplined contributors; etc.).

While the HOTS approach has spread steadily over the eight years of its existence, it has been a slow and sometimes arduous growth process. In part, this is due to the fact that sophisticated capabilities are required of teachers to develop and lead this process in the classroom. Such capabilities can obviously be learned, however, and their requirement provides only a partial answer to this slow expansion. The major barrier to the HOTS program expansion and to the fundamentally related Developmental Organization Technology is, rather, their violation of all our accepted truisms about learning and the processes that best support it — a violation of the paradigm that has shaped

the development of learning processes, in business as well as education, for the last eighty to one hundred years.

Based on the eight years of research findings, what seems like “common sense” regarding how to educate or to support learning, is actually “upside down” from what works. Copernicus was not the first human to discover that violating a predominant paradigm is a daunting and often dangerous undertaking. So powerful is an entrenched paradigm in shaping our thinking that a major crisis or catastrophe is often required to shake us free of its confining definition of reality. Thus it is not surprising that both education systems and business organizations regularly follow the same learning models that education has used for decades — models that, according to the

HOTS findings, not only do not achieve desired results, but actually work against their becoming possibilities. Current research indicates that businesses may not only be recipients of insufficiently and inappropriately educated graduates, but are compounding the problems by repeating the same processes based on the same “conventional wisdom.”

A CONTRAST IN PARADIGMS. In attempting to describe the distinctiveness of their processes, one of the HOTS research papers compares key elements of their approach to conventional wisdom. By substituting “job objectives” for “curriculum objectives” and “non-hierarchical” for “ungraded”, one can use the same contrasts to understand the distinctiveness of Developmental Organization Technology

in relation to traditional business training approaches. (see table)

Although this paper will not explicate the foundations of these two paradigms, I refer the readers to the article “Self-Organizing Leadership,” in *New Traditions in Business*², for further research.

<i>Conventional Wisdom</i> ³	<i>HOTS Approach</i>
Basic Skills Training ⁴	Thinking Skills Development
Reduce stress for success	Struggle is basic to success
Analytical Approach ⁵	Systems Approach
Linked to subject directly	No formal link to subject
By level, age, or capability	Ungraded approach

3. Although, some of these are seen as appropriate for some kinds of training, e.g. arithmetic skills, when used with the HOTS approach, the learning is significant increased in its effectiveness and in almost every case was able to reverse the deterioration in the students confidence and learning capacity.

. Basic skills of math and reading, etc., are still seen as valuable and are taught in parallel with the thinking skills. However the students who also have the HOTS program learn more rapidly and retain more, than those not in the program; also those in remedial courses lose ground in basic skills over time if not in the HOTS program

. Analytical approach is used in the schools for class work, for specific arenas but not as the overall approach in the HOTS program as the mode for improving intelligence and the other qualities sought.

. Renesch, ed., *New Traditions in Business*, “Self-Organizing Leadership” by Carol Sanford and Pamela Mang, New Leader Press, 1991.

Focus on curriculum objectives	Focus on Process of thinking
Be clear and unambiguous	Proper level of Ambiguity
Keep it Simple	Increasingly level of complexity
Expect Immediate results	Expect extraordinary results over time
Provide clear directions	Expect students to discover
Test and give feedback	Set up self-reflection
Provide answers and facts	Provide question
Fill Knowledge void	Build Intelligence
Highly structured learning	Unstructured Learning

Learn universal accepted answers	Develop their own answers
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OVERVIEW OF THE HOTS AND DEVELOPMENTAL TECHNOLOGY APPROACH.

Both the Developmental Organization Technology and the HOTS approach are structured as a network of interconnected elements. The materials/curriculum are sophisticated instruments that are designed with appropriate levels of ambiguity, requiring the participants to struggle to understand what is in the material and to extract meaning from the ideas that are there. This material becomes increasingly complex over time. As the participants work with the materials, they are encouraged to express the ideas that are emerging in their thinking and then to reflect on their own thinking processes. The discovery

process itself leads to improved confidence and self esteem. Over time, this process builds an increased level of intelligence in the participants. Both approaches require a sophisticated level of capabilities in the “teachers”, including competence in interactive questioning processes that induce self-reflection; an ability to spontaneously design learning processes to fit the current stage of development of a continuously evolving learner; an understanding of and ability to apply systems thinking; the ability to manage their own state in an environment of ambiguity and complexity; and a commitment to their own continuous learning and development.

A SURPRISE BONUS: THE

DEVELOPMENT OF INTELLIGENCE.

The improved performance that results from both the HOTS program and the Developmental Organization Technology are, by themselves, highly impressive but are not the most startling change that occurs. There is also a documented increase in the level of intelligence⁶ in the participants over time as they continue to develop in these models. In the schools, this increased intelligence is in:

- *Meta-cognition*:: Consciously applying strategies to solve problems
- *Inference from context*: Figuring out unknown words and information from the surrounding context
- *Decontextualization*: Generalizing ideas from one context to another
- *Information synthesis*: Combining

Gardner, Howard, Multiple Intelligences, Harvard Press, 1988

information from a variety of sources and identifying the key pieces of information needed to solve a problem

WHAT THE *HOTS* EDUCATION

PROCESS LOOKS LIKE.

The education model takes *ten percent (10%) of the students' time* and involves them in a self-organizing, self-managing process. If you walked into the classroom, you would observe the teacher engaging with an *ungraded group of students*, or on some occasions individual students, in an intensive *interaction*. S/he may be asking them to *reflect on discoveries* of the previous day and/or to *link concepts* learned from the previous day's program to other programs or everyday experience. Any answer that is offered is immediately

followed up with *challenging and probing questions*. The idea is not to determine a correct answer but to push students to *articulate their thinking*, to *experience extending and building thinking interactively*, to *explore alternative strategies*, to help them see and understand the *perspective from which they are looking* at the situation or idea, and to learn to *construct meaning* rather than be told what to do, how to do it, or why to do it.

Students learn to test ideas as fast as they can generate them, *using instruments* on which or through which to *develop their thinking*. In most schools this is a computer, although the computer is not the dependent variable in the process. After testing an idea, there is again probing interaction to *produce reflection* in the student and again

articulation of the thinking that is developing. Over a period of 3-6 months, students begin to model the teacher's interaction and thinking processes and become more self-generating of the processes already initiated. At this point, there is an *escalation in the complexity and scope of the concepts and the processes* used to engage the student.

As a part of the process, the student is also asked to *extrapolate* the learning from one situation and apply it to another situation. They begin to be able to move ideas and understanding from one situation or one context to another. When barriers or confusions arise, students are, through carefully worded questions, guided to *develop their own answers and, from these discoveries, to develop a process for formulating their*

own strategies for solving problems. Students are *challenged with very difficult concepts*, and are *responsible for generating their own thinking*. This inevitably results in students producing an increasingly rich quality of thinking and understanding.

Students are presented with materials and exercises that are *ambiguous in concept and direction*. The student is expected to *extract the meaning* from the materials and interpret the exercises to *determine the direction*. There is no attempt on the part of the teacher to influence the thinking developed or direction taken, again only to ensure *reflection on the part of the student* to observe value gained, processes used, and utility of the thinking developed. Audits of the level of understanding that has been developed are used neither to

correct nor to give approval or disapproval to the student, but only to design subsequent materials and processes. Working with the computer or other instruments for feedback, students are increasingly able to *understand themselves and their own development*. They learn to understand how they arrive at the “output” thoughts they have by *understanding their own thinking processes*.

One of the surprising elements is that there is no teaching of math or reading or any other basic skills in these sessions, and yet these skills, as we noted above, rapidly improve at rates that exceed those of average students and, in many cases, equal those of gifted students.

WHAT THE DEVELOPMENTAL

ORGANIZATION TECHNOLOGY

APPROACH LOOKS LIKE.

For the past 30 years, the Developmental Organization Technology has been applying fundamentally the same principles which shape the HOTS approach to development and learning in business arenas in many companies around the world.⁷ Walking into a developmental session utilizing this technology, one would see processes very similar in nature to those described above, though with other instruments substituted for computers. The development of adults, however, presents additional challenges not found in working with children. In order to ensure the same level of success, additional processes and higher levels of capability on the parts of the instructors

Sanford, Carol, and Pamela Mang, “DuPont: A Developmental Organization in Process”, *New Paradigms in Business*, Tarcher Press, 1992

are required, in part because it involves working with a far more complex set of mental and emotional dynamics.⁸ Not surprisingly, many of the mental and emotional characteristics that create these added challenges are a result of schooling in traditional learning processes. With so many more years of life, most adults have crystallized very strong ego patterns that filter any new experiences or input. They have very little tolerance for being uncomfortable, and consider it something to be avoided. Business managers and workers also have very little patience to wait for results. They have additionally been conditioned to believe the conventional wisdom about how education should be conducted, and so may be less open initially to processes

that contravene this wisdom. In some cases, this leads to a fear of “looking stupid” for not having the “right answers” immediately. These differences do not make this approach impossible, but require that more work be done initially on changing people’s belief systems about learning, developing and “trying on” new behavioral concepts, and building more self-reflective capability.

**PROCESSES UNIQUE TO
DEVELOPMENTAL ORGANIZATION
TECHNOLOGY.**

In developmental sessions where new materials are introduced, people work in holographic and/or natural work teams whenever possible. Instead of the computer, the use of sophisticated concepts to improve work in the pursuit of greater Value-Adding and Value-

⁸ “work Net Work” Newsletter, Vol. I January 1990 and Volume II, May 1990, SpringHill Publications, Battle Ground, Wa. USA

Generating processes and products provides focus for learning and development. By using real business tasks to apply the new concepts and engage with the developmental processes, changes within the work environment can be used as feedback from which the participants extract meaning and self-reflection. Conscious, intentional use of *mental structures* builds both systems thinking capability and discipline in the minds of individuals and groups.^{9 10} A fundamental aspect of Developmental Organization Technology is people working on their own personal development, along with team and organizational development, in order to learn to manage in the face of the challenges and struggles that are evoked

Bennett, John, *The Dramatic Universe*, Claymont Press, Charles Town, W. VA. 1974

Krone, Charles, Unpublished papers 1990-1992

in any transformative process. Working on personal development requires some way to be of service (to make a contribution) to something beyond oneself in order to activate the higher nature of self which then serves as a managing entity for the ego as it experiences confrontation.

ESSENTIAL CAPABILITIES REQUIRED BY THE DEVELOPMENTAL ORGANIZATION TECHNOLOGY

In the HOTS approach, the primary focus is on the role of the classroom teacher. In the Developmental Organization Technology, capabilities in two key roles are essential to having the process work — both must be present and integrated. These are Leadership, (initially from managers; ultimately from

all levels within the organization) and Resources (initially External Resources or Consultants, ultimately Internal Resources or employees of the business).

Leadership. Managers plays a particularly critical role in providing the nature of leadership required to enable success in the initial stages. Over time, this leadership is developed at every level, and in every function within the organization. Some of the primary characteristics of this nature of leadership include:

- Belief in the capacity of everyone to develop and learn beyond any level that could be predicted.
- Appreciation for the role of

ambiguity, complexity and struggle in developing intelligence and, correspondingly, ability to restrain the desire to help or rescue people for whom one feels responsible.

- Willingness to redefine one's own role, and to help others do the same as capability develops.
- Ability to sustain integration of developmental and business improvement efforts. (e.g. providing arenas for testing and applying new capabilities which involve responsibility for increasingly demanding business situations, goals and concerns)
- Value for building developmental processes into all the systems,

structures and processes which make up the on-going operations of the business.

- Supports the developmental process from a basis of personal experience and integrity as a result of having participated to a meaningful level of depth.

Resources.^{11 12} The Resource is the closest equivalent within the Developmental Organization Technology to the role played by the classroom teacher in the HOTS approach. Because of the sophisticated level of capabilities required of this role, it is initially played

. We use the term Resource (Re-source) to indicate that we are taking them back to themselves as the source of knowledge, development, and understanding

. These are all present in the HOTS program teacher role also

by a consultant as an External Resource. One of the responsibilities of this consultant however is to develop, within the organization, Internal Resources who can carry on this role through time. These people are an essential element in the self-sustaining nature that is characteristic of the Technology when it is appropriately applied. Capabilities required to play this role include:

- Extensive experience and skill in Socratic processes; (interactive questioning processes which evoke self-reflection) and understanding of the design, timing and psychology of successful struggle. e.g. ability to work interactively to create the development of meaning and deep understanding, without particular attachments either to any “right”

answers or to the subject matter being worked on; ability to maintain a non-judgmental and developmental environment in which participants can face the struggle, experience initial failure at difficult tasks and eventually master them due to innovative instruments and teaching methods, thereby building confidence through their own achievement in succeeding at levels beyond which they initially felt capable.

- Capability to design developmental processes. e.g. ability to design and manage group processes that introduce and maintain a level of ambiguity in the concepts and direction that is appropriate to the current level of capability and developmental needs of the group;

ability to design for individuals and groups in a living way so as to always be just ahead of their evolution.

- Understanding of the full range and systemic interrelationships of the developmental models and processes that must be introduced in order to embed self-sustaining, self-organizing change processes (normally a period of up to 8 years), and the theoretical base from which they are built¹³

- Ability to model, with authenticity derived from personal experience, personal development, self-reflective processes and self-management.

Sanford, Carol, "From Science to Technique", SpringHill Publications, 1989

WHAT IS *NOT THE CAUSE* OF THE IMPROVEMENT¹⁴

Research has isolated the following elements, and discovered they are not the dependent variable in creating the successes resulting from the HOTS program and the Developmental Organization Technology. In other words, doing any of the following by themselves will not produce the transformation in intelligence and ability to contribute that marks these two approaches.

1. The use of the technologies and associated instruments, such as computer/software, or the frameworks and mental technology without the

interactive processes and teachers/resources with sufficient capability and experience in designing, leading and engaging participants in these processes. Using questioning of participants without understanding the structuring behind the questioning process does not create the shift in state or thinking. The recent popularity of having third parties ask questions may get people to think about a question, but without the particular curriculum, the technology for structuring particular nature of questions, and the capability to ask reflective and systemic questions, the transformation in intelligence and personal state does not happen.

*2. Use of the interactive processes with any curriculum.*¹⁵ The sophistication of

. Pogrow, Dr. Stanley, "Solving the at-risk problem by Intellectually Challenging Students", Phi Delta Kappan, Fall 1989

. Ornstein, Robert, The Evolution of Consciousness, Prentice Hall, Inc. ,p. 268. Ornstein calls for a "new curriculum about the nature of the human mind...we need

the materials, appropriate levels of ambiguity and increasing levels of complexity and precision in concepts and language are all essential ingredients of the “curriculum” required to build intelligence.

3. Copying the form of the results: e.g. putting participants in multi-level, cross functional, operating, or slice teams. The teams, without the other elements, will move quickly to a depleted state, even with initial positive energy.

4. Expecting more of people or using recognition and rewards with teams or individuals which meet the expectations. Instead of promoting self-organizing development, this creates people who are motivated by external forces rather than

to update our education continually, in schools, in the home, in the media, and teach a new upbringing. We need school curricula to teach us about why our mind is primed to be ready for the tiger, to react quickly to emergencies, whereas small slow changes in the work are the real threats.”

intrinsic reflection.¹⁶

5. Using traditional approaches to teaching thinking skills. The traditional approaches include teaching problem solving models, as well as critical, and lateral thinking skills. Although they are teaching useful techniques, they are not transforming of intelligence, and therefore of the ability to create one’s own techniques to meet ever-changing environmental demands.

7. Trying to produce a crash course that accelerates learning. A constant and continually building experience involving the introduction of concepts and interactive processes over an extended period of time is required to embed the capabilities required for self-sustaining, self-renewing change

Sanford, Carol, “*Leadership of Motivation: The Ethics and Practicality of Incentives. Leadership in A New Era*” New Leader Press, 1994.

processes.

SUMMARY

Both the Developmental Organization Technology and the Higher Order Thinking Skills Program share as critical elements the developing of thinking capability in interactive processes that use appropriately designed materials, in conjunction with instruments that can give interactive, self-extracted feedback. This feedback is used, in turn, to help the participant (whether individual or team) gain self-reflection and self-managing capabilities. These capabilities enable seeing and managing one's own mental processes, one's own inner responses to challenge and uncertainty. Perhaps even more important, they also develop the capability to generate strategies to continuously improve one's ability to

manage the above — a capability that is at the core of the continuous evolution of an organization.