Forget about the box. Think strategically.

CREATING A CULTURE OF THINKING IN DCPS

A Generic Proposal for the District of Columbia Public Schools Board of Education

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"Learning is nature's expression of the search for development. It can be diverted or blocked, but it can't be prevented from occurring. The core educational task in our time is to evolve the institutions and practice that assist, not replace, that natural learning process."

Peter Senge et al
Schools That Learn

Title

Creating a Culture of Thinking in DCPS

Mission

"Prepare students for college and work" in a Knowledge Age. (See lever of change #7 in the 2005 DCPS Compact report.)

That ten-word statement provides a mission for the "Creating a Culture of Thinking in DCPS" project. Along the way, the project empowers students, directly, and empowers teachers to empower even more students.

Executive Summary

In its first two years, the "Creating a Culture of Thinking in DCPS" Project will serve students and selected collaborating teachers including Teacher Consultants in the District of Columbia Area Writing Project.

Students complete a workshop series to learn the Tishman, Perkins, and Jay framework for a culture of thinking (in brief, the Harvard Model). This workshop series (seven, 90 minute sessions) offers in depth experience in each of the Tishman, Perkins, and Jay four forces of enculturation and six dimensions of a thinking classroom along with selected African American Literature as a feature of culturally relevant pedagogy. Also, each workshop features Howard Gardner's new paradigm instructional-design-theory as its primary method for active learning and an essential question based on the new DCPS ELA standards for evaluating and writing persuasive texts.

In brief, these workshops exemplify standards-driven thinking classrooms.

Collaborating Teachers help to fine tune each workshop storyboard (plan) for the population of students served. Each collaborating teacher co-facilitates the workshops with the Educational Psychologist. Together, they reflect on instruction with the benchmarks embedded in the four forces of enculturation (model, explain, interact, and feedback) and examine student achievement in relationship to the six dimensions of a thinking classroom (language of thinking, thinking dispositions, mental management, strategic spirit, higher order knowledge, and thinking transfer).

In addition, Collaborating Teachers become Action Researchers working with the Educational Psychologist to pay attention to what happens in culture of thinking as students become empowered.

During the second year, Collaborating Teachers meet periodically in study groups with the Educational Psychologist to reflect on the Harvard Model and student achievement in their respective schools. Study groups feature the "co-generative dialogue" strategy to structure talks about thinking classrooms in the wild (as such classrooms work within the constraints of schools still set in an Industrial Age paradigm) as well as specific protocols for examining student works. Finally, in the study groups, teachers encounter a specific method of action research and create research projects to conduct.

Also, in the second year, they engage a new cohort of students or extend the work with already empowered students to include protocols from the visible thinking research at Harvard University Project Zero Research Center.

In all, the "Creating a Culture of Thinking in DCPS" project empowers both students and teachers who participate in <u>standards-driven thinking classrooms</u> modeled in each workshop. The project provides students and teachers with a process for becoming cultures of thinking the rest of the year and sets up what Peter Senge calls a "natural learning process." Finally, for teachers, it provides both professional development and support for action research.

Goals

1. Students in the project will complete the Harvard Model workshops early in the school year and practice the four forces of enculturation as well as the six dimensions of a culture of thinking during the rest of the school year. Along the way at least three summative evaluations, including a final research paper, will serve as assessments of understanding (student achievement).
2. Collaborating Teachers will learn the Harvard Model by facilitating and co-facilitating workshops for students as well reflect on practice in ongoing study groups. In addition, they will pay attention to student achievement with an Educational Psychologist versed in protocols for examining student works and learn the core ideas of Peter Senge's "fifth discipline" approach for 21st century schools.
3. Collaborating Teachers will conduct an action research project and present their findings at a professional conference.

Objectives (SMART)

1. By the end of June 2007, each of the participating schools with Collaborating Teachers and the Educational Psychologist will have at least 20% of its student population (a critical mass) empowered with the Harvard Model. (For example, the present 2005-2006 project involves 150 of 600 students at McKinley Technology Senior High School. That represents greater than 20% of the student population. Yet, economically, those 150 students are distributed in one teacher's six classes of English II.)
2. By the end of the August 2007, most of the Collaborating Teachers and the Educational Psychologist will have completed Harvard University Project Zero Research Center's "Teaching for Understanding" Summer Institute as a team. Also, they will have completed a two—week summer institute for action research in the District of Columbia Area Writing Project at Howard University.
3. By the end of 2007, each of the participating schools will have at least 20% of its student population (a critical mass) empowered with the Harvard Model and the teachers will be conducting action research projects.
4. By the end of 2008, most of the Collaborating Teachers will have published action research papers related to reflections on the Harvard Model for creating a culture of thinking or, at least, presented talks a professional meetings such as the Urban Sites Conference of the National Writing Project or the International Ethnography and Education Research Forum at University of Pennsylvania.

Activities

- During the first year (2006-2007), the Educational Psychologist in collaboration with each participating teacher will have designed workshops on Creating a Culture of Thinking. (See present project for 150 students at McKinley Technology High School.) This requires a three-day professional development workshop prior to the school year opening.
- In each workshop, the Educational Psychologist will feature Howard Gardner's MI approach as the bread and butter method for active learning. That means students will experience point of entry activities to tap prior knowledge and foster inquiry, powerful metaphor activities to wrap minds around images capturing the featured dimension of a culture of thinking, and multiple representations to deepen thinking and understanding about the dimension. Once the teachers have learned the model, the Educational Psychologist will continue consultations in study groups with the Collaborating Teachers as they implement the Harvard Model with their respective student populations.
- During the summer, the Collaborating Teachers will complete Harvard University's "Teaching for Understanding" Summer Institute" to learn more about a culture of thinking and related research based topics. Also, they will engage a two-week summer institute for action research and additional ideas from Senge's "fifth discipline" at Howard University to prepare for the second year of the project. These two summer institutes will help them to conduct action research projects about cultures of thinking.
- During the second year, Collaborating Teachers in consultation with the Educational Psychologist will conduct action research projects, primarily. Also, they may extend the gains with student empowered with a culture of thinking during the first year or repeat the workshops with a new cohort of students. In addition, they will participate in ongoing study groups to support action research projects.
- All along the way, the Educational Psychologist or an outside evaluator will use evaluation design methods to measure the effectiveness of the project. By the end of 2008, the Educational Psychologist or outside evaluator will give a written, final report to the Superintendent of DCSP and the Board of Education members. In addition, the Educational Psychologist, Collaborating Teachers, and possibly empowered students will appear at School Board meetings to discuss student achievement in the project. The Educational Psychologist will make quarterly progress reports to the Superintendent and School Board Members throughout the project life.

Resources

For the last ten years, the District of Columbia Area Writing Project (DCAWP, Judith Kelly, Director) has supported writing and thinking across the curriculum with several professional development courses including a summer institute and in service courses for educators in the district area. DCAWP nests within the context of the National Writing Project, which fosters teacher research as well intensive use of writing to learn and writing to publish. With a membership of over 100 educators, DCAWP serves as the major resource base for this project.

Presently, Jerry and Ingrid Fluellen, two Teacher Consultants in the District of Columbia Area Writing Project (DCAWP), have been designing and facilitating a "Creating a Culture of Thinking" project for 150 English II students at McKinley Technology Senior High School, Dan Gohl, principal. Their work serves as a prototype for the project described in this proposal.

Howard University houses DCAWP, providing an office and classroom space for the Writing Project's Summer Institute on writing and a summer writing camp for youth. Howard University is the preferred site of the proposed DCAWP summer institute II on action research. (See the proposed Teacher Inquiry Communities proposal for the National Writing Project.)

Harvard University houses Project Zero Research Center, which has several research strands related to creating a culture of thinking including the thinking classroom, visible thinking, and thinking dispositions strands.

Like Howard University, Harvard PZ offers a summer institute in which participants interact with researchers and study together with skilled facilitators. Additionally, Harvard University provides online courses for more professional development in ideas related to creating a culture of thinking and interactive design tools for planning.

The Logan Center of DCPS provides seminar space for the study group meetings with Collaborating Teachers and the Educational Psychologist.

Finally, the Library of Congress offers free cards for researchers and encourages full use of its facilities. Librarians there are skilled at using technology to assist researchers in exploring their inquiries about thinking classrooms and creating cultures of thinking.

Change theory

20th century philosopher Gregory Bateson said scientists deal with double description—two or more confirming studies that increase the likelihood of a true finding. Because so many studies say the same thing, a research-based belief is this: teacher quality correlates highly with student achievement. That is at least a doubly described belief, a belief at the heart of the National Board for Professional Standards movement.

So in light of double description, the "Creating a Culture of Thinking in DCPS" makes sense. It empowers students. It empowers teachers. Student achievement should improve.

The project empowers students with thinking words that both state the type of thinking required and a standard for achieving that thinking. (See Jerry Fluellen's "Words for the Mind: An Analysis of the Language of Thinking".) It empowers students to use five dispositions that support good thinking, specific strategies for metacognition, ways to become more curious, ways of creating works-- intellectual products that pose or solve complex problems—and ways to transfer what they have learned to other subjects and life. Students change from within as they model, explain, interact, and give feedback. Students change from within as they think, read, write, speak, listen, and view more effectively with the four forces of enculturation and six dimensions of a culture of thinking. Students change from within as their new knowledge impacts on other students.

The project empowers teachers with new knowledge to solve the complex problem of delivering sound, standards-driven instruction. Just as students create works that reflect deeper disciplinary understanding, teachers create works that reflect deeper understanding of a culture of thinking, the core ideas of the fifth discipline, and a specific approach for action research. They present their new knowledge to others in professional meetings.

Empower the students. **Empower the teachers.**

In six words, that is the change theory behind this project.

More profoundly, Dr. Janey's strategic plan and the master plan for the district aim at transforming the entire system. But this change, simultaneously, must happen within one teacher at a time. Yet, few of the district initiatives address teachers from the inside out; the very souls who will make second order change—total systems transformation--a reality.

"Creating a Culture of Thinking in DCPS" builds the capacities of a few teachers. It changes them from within. In two years, these teachers will have the capacity to affect other teachers who want to create cultures of thinking.

Additionally, this may be one of the first projects in the nation to use Howard Gardner's model for "changing minds" as its specific theoretical approach to change. (See Gardner's Changing Minds model.) It certainly is the first project in the nation to combine the Harvard Model for creating cultures of thinking, core ideas from Senge's "fifth dimension (personal mastery, mental models, shared vision, team learning, and systems thinking), and systematic action research.

In brief, Gardner's changing minds model implies that when a critical mass has been created (about 20% of the population), the entire system will transform. He specifically says that 20% of a population will do 80% of the work. But when seen through the eyes of transformation, 20% of a population might change close to 100% of the system. Because his model is so new, no one knows about its power to predict. But it is possible to inquire: how might Gardner's change of mind model explain system transformation?

On a much smaller scale, Gardner's change model might explain the transformation of handful of teachers who gain the capacity to conduct action research about a powerful framework such as the Harvard Model. In a district aiming to incorporate action research into the assessment of every teacher, this handful of pioneers will be able to lead that initiative. They will know both a powerful cognitive framework for creating standards-driven thinking classrooms and a specific approach for conducting action research. Also, they will be able to wrap their minds around the core ideas of the fifth discipline and, thus, think beyond the box of the Industrial Age beliefs about education serving as barriers to growth of schools as living systems in DCPS. Said positively, the teachers and students in Creating a Culture of Thinking in DCPS will counter mechanistic notions of education with a new paradigm living systems view outlined in the works of Peter Senge, Fritjof Capra, Humberto Maturana, Francisco Verela, and many other systems thinkers.

Program Evaluation Design

Needs Assessment

In a five year period between 2000 and 2004, only three high schools out of 22 in the District of Columbia Public School (DCPS) system consistently had a significant number of students who scored proficient and advanced on the SAT 9 used as the primary indicator of literacy and numeracy achievement. During this time period greater than 10 high schools had zero students who scored advanced and in some cases less than two percent who scored proficient.

That meant 98 percent of students in some of the schools were basic or below basic. That meant almost half of the district's high school students were basic or below basic on the SAT 9.

During this same five-year period district scores on administrations of the National Assessments of Educational Progress and number of students taking and passing advanced placement tests were dismal. The system was at risk.

In response to this history of poor performance and under Superintendent Janey's "Declaration of Education," the district initiated a plan to align standards, curriculum, assessments, textbooks, and professional development.

Assistant Superintendent Bonner's role in this strategic plan, among other efforts, has been to create a district wide scientific approach to knowing, teaching, and assessing standards. By the end of June 2005, a core leadership team had trained dozens of anchor leadership teams to use the scientific approach to knowing standards. These anchor teams trained dozens and dozens more educators in the scientific standards approach, and the training spread to at least a critical mass of educators by the fall of 2005. Over the next few years, most educators in the district will learn the full range of the scientific approach to knowing, teaching, and assessing standards.

Already in the brief span of one year, the district can point to gains in the National Assessment of Educational Progress that are greater than the national average gain.

And the first administration of the new district standardized test (based on one from Massachusetts) came in the fall of 2005. Scores from that administration can best be compared with scores from the 2006 testing because they will be versions of the same test aligned to standards.

The good news comes not in the gains reported on the district web site when comparing 2005 and 2004 administrations of district testing. The good news is that DCPS becomes one of the first urban schools in the nation to align its standards/curriculum continuum with a district test that actually measures the content taught. That is exactly what standards guru Lauren Resnick says excellent districts should do in order to improve academic achievement. Add this district coherence to the standards professional development, adoption of textbooks also aligned with standards, and the Superintendent's Declaration of Education (strategic plan). A foundation for 100% proficient or better students by 2014 has been laid.

However, few district efforts aim, explicitly, at making the **teacher a reflective practitioner**—one who can pose a problem and systematically seek solutions that impact on student achievement and teacher knowledge. That is to say, few initiatives empower both the students and the teachers with reflection tools.

One recalls the proverb: "Give me fish and I'll eat today. Teach me how to fish and I'll feed myself tomorrow."

Even National Board Certification, which demands reflective practice in portfolios and online tests for each candidate, does little to teach teachers how to fish.

At best, the professional development for DCPS teachers is driven by market forces, on the one hand, as textbook providers seek to have their programs followed to the letter, and scientific standards, on the other. The scientific standards approach seeks to have teachers follow a somewhat rigid model. Professional development with the scientific standards has been promising, however, because it pays attention to building

capacities of teachers and ultimately students. But it, too, is primarily an outside in approach. As a manifestation of Industrial Age thinking, it is floor not a ceiling.

What comes next once a critical mass of teachers have learned the scientific standards approach?

If 100% of the student population in DCPS will have achieved proficiency or better by 2014, then teachers and students will have had to learn new knowledge based on the best of what new knowledge tells us about teaching and learning. They will have had to be empowered as **creators of knowledge** and not just consumers.

Also, teachers and students in cultures of thinking do not engage create knowledge in the old paradigm, Industrial Age way. Instead, the view of knowledge here draws on a transactional perspective.

Citing the research of Chilean cognitive scientists Humberto Maturana and Francisco Varela, Peter Senge said, "Knowledge…does not mean only a mental storehouse of facts and theories, accumulated in memory, but the capacity to do something with this information." (See Peter Senge*: Schools that learn*.)

The Tishman, Perkins, and Jay framework (Harvard Model) is rooted in the last 25 years of cognitive research and theory. It represents new knowledge gained from cognitive research and enables teachers to create new knowledge as action researchers. Best of all, once participating teachers and students have co-created cultures of thinking, they will have the capacity to create works with their knowledge. These works are shared with others, making each culture of thinking a learning organization in the Senge sense.

Also, as action researchers and educators familiar with the core ideas from the "fifth discipline", the teachers will have become leaders capable of spreading inquiry and creativity throughout their schools, and, thus, throughout the district. They will be true to Noam Chomsky's observation that fundamental human pursuits are to "inquire and create."

Evaluation Rationale

Rossi, a nationally recognized expert on program evaluation, says evaluation falls along the lines of a hierarchy. On one end of the continuum is the determination of a need for a program. While that can deal with finding out if there is a need for a new program as well as a long established program, it is most often used to decide on new programs (or projects). At the other end of the continuum is program evaluation that deals with the cost effectiveness of a successful program. Such programs already have a long history. (See Rossi, 2004.)

The "Creating a Culture of Thinking in DCPS" project would not be served well by either ends of Rossi's continuum. In other words, the needs assessment, to a large degree, has been done, resulting in the "Declaration of Education" strategic plan guiding the district up to 2014. And the district alignment efforts already aim at reversing historically poor student achievement.

More so, the "Creating a Culture of Thinking in DSPS" project is not yet established so it is more toward the middle of the continuum.

Rossi says a program or project still must always do what it says it will do. Thus, a process/outcome evaluation of the Culture of Thinking project makes sense. Such evaluation items will guide progress reports that address the goals and SMART objectives stated earlier.

Given the two-year life span of the "Creating a Culture of Thinking in DCPS" project, process evaluation questions to examine input and output seem appropriate.

Also, outcome evaluation questions will address the effectiveness or ineffectiveness of the project as well as suggest ways to improve.

Process Evaluation

Thus, for process evaluation questions (ones considering the inputs and outputs of program operations), the following seem appropriate:

Inputs

- Who designed and facilitated the project and workshops?
- What qualifications did such a facilitator need?
- How were participants selected? What were the minimum qualifications?
- What characterized the relationships among the project members?
- What were the defining characteristics of the culture and context for this project?

Outputs

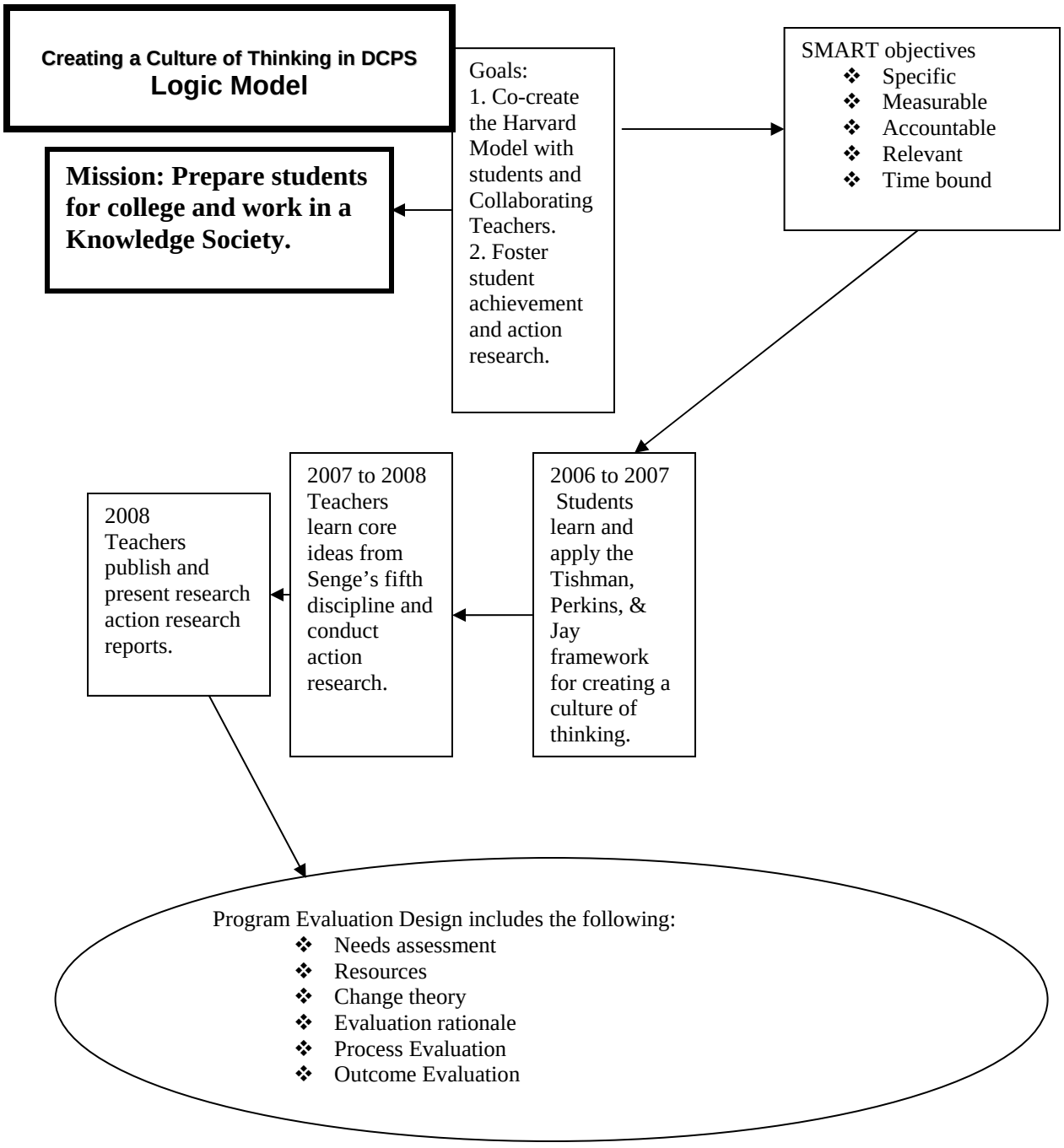
- How was the extent of member participation determined and what defined completion of requirements?
- Who did the measuring of participant knowledge and what were the instruments for measurement?
- What defined success of the project?
- Were the voices of participants included in the story of the project?

Outcome Evaluation

For outcome evaluation questions, the following seem appropriate:

- Did the program meet its goals and objectives?
- How were observations, documents, performances, and portfolios used to assess achievement of students?
- As the students used the Harvard Model for creating a culture of thinking did indicators of student achievement improve?
- How did the collaborating teachers use action research to show what they understood about creating a culture of thinking in Knowledge Age schools?
- How did the Educational Psychologist conduct action research on the action research process and what were the findings? How were the research findings shared?
- Did the project have an impact beyond its borders?

Finally, the logic model below provides a visual summary of the "Creating a Culture of Thinking in DCPS" project.


Creating a Culture of Thinking in DCPS
Logic Model
Mission: Prepare students for college and work in a Knowledge Society.
Goals:
1. Co-create the Harvard Model with students and Collaborating Teachers.
2. Foster student achievement and action research.
SMART objectives
Specific
Measurable
Accountable
Relevant
Time bound
2006 to 2007 Students learn and apply the Tishman, Perkins, & Jay framework for creating a culture of thinking.
2007 to 2008 Teachers learn core ideas from Senge's fifth discipline and conduct action research.
2008 Teachers publish and present research action research reports.
Program Evaluation Design includes the following:
Needs assessment
Resources
Change theory
Evaluation rationale
Process Evaluation
Outcome Evaluation

CODA

The year was 1997. A packed auditorium of 300 mind travelers from around the world had come to Harvard University's weeklong summer institute to touch the robe of knowledge guru David Perkins.

Almost everyone knew about Howard Gardner's multiple intelligences theory. But David took the mike and told the audience that he, too, had a theory of multiple intelligences. That was news.

Long had David and Howard been rivals and friends. David earned his Ph. D. at M. I. T. He concentrated in mathematics and computer science. Howard earned his Ph. D. at Harvard University, concentrating in psychology with a growing interest in the newly minted neuropsychology field. Together, they had been co-directors of Harvard University Project Zero research center.

David said his learnable intelligence theory had three parts:

- Intelligence as native endowment
- Intelligence as experiential
- Intelligence as reflective

For a district like DCPS—one aiming to raise student achievement dramatically by 2014-- **Learnable Intelligence Theory** holds a lot of promise.

First, the theory links with the traditional view that intelligence can be measured, to some degree, with standardized tests. Such measures yield IQ scores. But unlike the traditional view, which says a person's IQ scores changes very little from cradle to coffin, Perkins believes it can change quite a bit.

He feels that people gain experiences from jobs and activities in life. These experiences can be rich enough to add value to native endowment and show up as real gains in IQ over time.

Lastly, he feels that people can learn to use strategies for effective thinking in their everyday lives as well as work situations. Such strategies generate reflective intelligence.

David looks for the day when researchers and teachers will know enough to teach reflective intelligence strategies that will raise IQ scores as much two standard deviations. That is a lot of power. If intelligence can change a lot, so can student achievement.

Working with Harvard researchers Shari Tishman and Eileen Jay, David also developed a framework for creating a culture of thinking. This framework applied learnable intelligence theory.

As an unintended bonus, it illustrated Piaget's still little known reflecting abstraction model. Just before he died, Piaget provided a theoretical explanation of what it meant to think deeply.

Applying Perkins and Piaget, the "Creating a Culture of Thinking" project is underway right now at McKinley Technology Senior High School with Ingrid Fluellen, a Teacher Consultant in the District of Columbia Area Writing Project (DCAWP) and former Apprentice Faculty member at Harvard's summer institute. Thanks to her foresight and that of Dan Gohl (McKinley's principal), as well as collaboration with Jerry Fluellen, an Educational Psychologist, 150 English II students are preparing for college and work in a Knowledge Society. They are co-creating a culture of thinking with the Harvard Model.

These McKinley students are all experiencing the words of W. E. B. DuBois: education should carry each student as far as he or she can go in learning the "accumulated wisdom of the world."

Selected bibliography for thinking outside the box

Akbar, A. (1998). *Know thy self.* Tallahassee, Florida: Mind Productions and Associates.

A vital counterpoint to the Anglo Saxon values dominating much of psychological thought and Western society, this book offers a three-fold cord for liberation of African American people. The author argues that African Americans must define the self in positive terms, create a legacy of competence (images of African Americans who are or have been achieving), and develop a shared vision of our possibilities, individually and collectively.

Andrews, D. ((2000). What brain research has to tell educators: Mandates and metaphors. ED412 073

A review of recent research from the neuropsychology field vis a vis educational applications, this author argues that brain research be best viewed for themes, metaphors and mandates for educators. He warns that specific classroom application from brain research are unsound, but metaphors such an active learning develops the brain offer rich applications for instruction and assessment.

Blythe, T. (1998). *The teaching for understanding guide.* San Francisco. Jossey-Bass.

A practical entry into the teaching for understanding framework emerging from research and practice at Harvard University Project Zero Research Center and classrooms around the world, this guidebook instructs readers in each of the components to the framework.

Brand, S. (1999). *The clock of the long now: Time and responsibility.* New York: Basic Books.

If a clock that rings every one thousand years and has a big gong in 10,000 years might serve as a powerful metaphor for long-term thinking. That is what Brand his colleagues hope for: a way of involving humankind into a longer now: plus and minus 10,000 years as a way of seeing our present circumstances on Earth.

Briggs and Peat. (2000). *Seven life lessons of chaos: Spiritual wisdom from the science of change.* New York: HarperTrade.

In addition to spiritual insights, the work is valuable for its explanation of paradigm shifts: from 800 years of mechanistic thinking to the emerging holism inherent in chaos theory.

Capra, F. (1982). *Turning point: Science, society and the rising culture.* New York: Bantam Books.

Extending Thomas Kuhn's word paradigm, this book argues that paradigm refers to the sum of beliefs and values of a whole civilization. More so, as the argument goes, a new paradigm is emerging to replace the Newtonian one that has dominated Western Thought for at least 400 years. This ecological paradigm offers new insights and perspectives about human life on Earth.

_____. (1996). *The web of life.* New York: Anchor books.

A theory of complexity to explain the interconnections in life that seemed to be separate from the perspective of the Newtonian paradigm, this book begins a whole new way of seeing across many fields including the development of a nonlinear model for literacy and a program to provide a context for developing literacy—the thinking classrooms.

_____. (2002). *The hidden connections: Integrating the biological, cognitive, and social dimensions of life into a science of sustainability.* New York:

Doubleday.

This book extends the theory of complexity born from an ecological paradigm to an explanation of macro global problems from economy to ecology. A major synthesis of the author's previous works, the particular theory of complexity presented connects ideas about the nature of life, mind and consciousness, and social reality into a coherent whole. Then the author applies the whole theory to an examination of global issues.

Capra, F., Steindl-Rast, D. & Matus, T. (1992). *Belonging to the universe: Explorations on the frontiers of science and spirituality.* New York: Harper San Francisco.

Among the first books in the world to cite defining characteristics of a new paradigm in science and spirituality, this book explains the ecological paradigm in more detail and compares to the Newtonian paradigm that has dominated Western thought the last 400 years since Newton, Decartes et al.

Chang, K. (2004). Ideas and Trends. *The New York Times* October 24.

An argument about the way a mathematical equation can explain precise relationships among variables, this article inspired the equation used to express a novel view of thinking classrooms as $T = R(FD)$ where T is thinking classroom, R is Piaget's reflecting abstraction model, F is forces of enculturation in the Tishman, Perkins, & Jay framework for creating cultures of thinking, and D is the set of six dimensions of a thinking classroom in said Harvard University framework.

Chomsky, N. (2005). *Government in the future.* New York: Seven Stories Press.

Challenges citizens to eliminate repressive and authoritarian institutions, state and private.

Fabermen, B. and Musina, R. (2004). Picturing the concepts: An interactive teaching strategy. *Thinking Classroom: A Journal of the International Reading Association* 5 (4) 12-16

Provides a strategy for envisioning ideas, thus, giving students with high visual spatial intelligence an entry into thinking well.

Fluellen, J. (1996) Developing mindful learners model: A 21st century ecological approach. ED403020

One of the first published efforts to connect Ellen Langer's mindfulness theory, Howard Gardner's multiple intelligences theory, and Capra's ecological paradigm.

_____. (2002). Teaching for Understanding: The next 100 years. Paper presented at the 24th International Education and Ethnography Forum at University of Pennsylvania. ED467 519

Exploring three-layered view of teaching for understanding, the author connects Howard Gardner's MI approach, Harvard University Project Zero Research Center's teaching for understanding framework, and Piaget's reflecting abstraction model as a theoretical explanation of what it means to understand. The paper ends with best, worst, and probable scenarios about how teaching for understanding might fare in our nation's schools over the next 100 years.

_____. (2005a). Convergence: Human Intelligence the Next 100 Years. Journal of

Learning and Cognition. Washington, D.C.: Howard University.

Among the first papers in the intelligence field to see how a family of new ideas have been forming a second wave. The first wave of theories about intelligence had been the psychometric view. This wave said intelligence was innate and remained about the same over a life span. The second wave includes Howard Gardner's multiple intelligences theory, Robert Sternberg's triarchic theory of intelligence, Ellen Langer's mindfulness theory, David Perkins' learnable intelligence theory, and ideas emerging from brain research as a pre-theory. This wave said intelligence could change over a life span, given teachers, schools, parents, experiences, and reflections. The second wave can be called "teachable intelligence." One of the three scenarios at the end of the paper introduces the possibility of a third wave emerging from African psychology sometime in the next 100 years.

_____. (2005b). Puzzles and Possibilities. Workshop at The International Association (IRA) Regional Conference in Washington, D. C. June 23, 24, 2005.

Among the first workshops in the District of Columbia to introduce the thinking classroom as a relatively new construct. Served as a prototype for the Creating a Culture of Thinking Project at McKinley Technology Senior High School.

_____. (2005c). Words for the Mind: Analysis of the Language of Thinking. (paper in press) ERIC data base.

Used David Perkins' knowledge as design method of critical thinking to analyze the Language of Thinking Dimension of the Tishman, Perkins, and Jay framework for creating a culture of thinking.

_____. (2005d). What is the language of thinking? Talk delivered at Howard University, Graduate Course "Language and Culture" Johnson School of Communication, November 28, 2005, Professor Richard L. Wright.

Introduced the term "metalinguistic power" to extend the definition of language of thinking presented by Tishman, Perkins, & Jay. Said thinking words not only tell the kind of thinking and provide a standard for doing that thinking well, they organize thinking and define what is missing as well.

Fluellen, I. & Fluellen, J. (2005). Creating a Culture of Thinking Project (plan, workshop story boards, selected handouts, summative assessments). In progress. Washington, D. C.: Howard University, District of Columbia Area Writing Project.

A living curriculum, this project involved 150 English II students at a public technology senior high school in Washington, D. C. Students engaged the Tishman, Perkins, & Jay framework for creating a culture of thinking as well African American literature and future studies as examples of culturally relevant pedagogy. Each of the seven workshops in the project also featured Howard Gardner's application of multiple intelligences theory in a new paradigm instructional design theory, namely, the MI approach. In addition, each workshop used an essential question based on the new standards for the District of Columbia Public School System. In brief, students participated in standards-driven thinking classrooms.

Forman, P. and Saint John, R. (2000). Creating convergence. *Scientific American* (November) 50-56.

Coined a new meaning for the word convergence, namely, two or more digital electronic devices merging to form a new product with uses none of the original devices had alone.

Gardner, H. (1983). *Frames of mind: Multiple intelligences theory.* U.S.A.: Basic Books.

Intended originally for psychologists, this theory argued that children and adults around the world had seven intelligences, each with a set of core abilities and each relatively autonomous. Defining intelligence as the ability to solve problems or fashion intellectual products of value to others, the theory suggested that each person was at promise in each intelligence; each intelligence could be increased with teaching, coaching, and experiences.

_____.(1999a). *Intelligence reframed: Multiple intelligences for the 21st century.* New York: Basic Books.

Revisiting multiple intelligences theory, the author argued that naturalistic intelligence met his original eight criteria for a given intelligence. In addition, he argued that existential intelligence (the capacity to pose or ponder questions about ultimate realities such as God, love, human purpose etc.) did not fully qualify to become the ninth intelligence.

_____. (1999b). MI approach. In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional* theory. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

An application of multiple intelligences to create a simple, yet powerful method for helping students to understand disciplines more deeply, the MI approach stands tall among new paradigm instructional design theories because it rests on a landmark theory not just a collection of studies.

_____. (1998). Melding traditional and progressive perspectives. In M. S. Wiske (Ed.), Teaching for understanding: Linking research with practice (pp 345-350).

Taking a performance view of understanding instead of schema perspective, the author argues that understanding might best be understood as a transfer of knowledge from one situation to a situation for which that knowledge is appropriate.

_____(2004). *Changing minds: The art and science of changing our own minds and other people's minds.* Boston, Massachusetts: Harvard Business School Press.

Applying psychological ideas to the world of business, this book offers a new change theory. The author argues that leaders must consider several specific steps in order to change the minds of others or one's own mind. The steps are as follows: present content and desired content, size of audience, type of audience, directness of change, levers of change, and ethical dimension.

Grills, C. T. (2004). African psychology. *Black psychology.* (R. L. Jones ed.) Hampton, VA: Cobb and Henry Publishers.

Providing a conceptual framework for the tenets of African Psychology, this chapter in a landmark book, lays a foundation for further reading in the field. In particular, it suggests a new paradigm for viewing wellness—one completing an Anglo Saxon view.

Holliday, C. (2001). Sustainable growth, the DuPont way. *Harvard Business Review* (September). 129-134.

Tells how DuPont reframed itself as in the business of sustainability. Sustainable systems find a niche in the culture and grow according the limits of the niche. They add services to become more complex, and they take care of people.

Langer, E. (1989). *Mindfulness.* Reading, Massachusetts: Addison Wesley Publishing Company.

Based on over 50 empirical studies, this book synthesizes the author's research into a theory of mindfulness. Key findings of the studies were these: mindful people welcome new information, create new categories for the information, hold more than one perspective, see life as a process, and can reframe situations.

_____. (1997). *The power of mindful learning.* Reading, Massachusetts: Addison Wesley Publishing Company.

Extending mindfulness theory to the school systems of the nation, this book illustrates ways of teaching children to learn more mindfully. Along the way the author challenges many long held beliefs of educators, thus, helping them to become more mindful as well.

Naisbitt, J. (1983). *Megatrends.* New York: Warner Books.

In addition to introducing the term Megatrends to the world and providing a new way of understanding the future (one based on content analysis and identification of deep trends sweeping the nation), the author introduces the idea that 21st century basic skills are thinking, learning, and creating. These are the new foundations upon which to base developing literacy.

National Institute for Literacy. (2001). *Put reading first: The research building blocks for teaching children to read.* USA: United States Department of Education.

A summary of a landmark work involving a synthesis of the findings from over 100,000, this book outlines the five pillars for developing early literacy: phonemic awareness, phonics, vocabulary, fluency, and comprehension. Students need a level of mastery in each of these as they learn to read and continue with them as they read to learn. Each pillar exemplifies literacy at work from the inside out—understanding interacting with creating works.

Nobles, W. (2005). Lecture on African Psychology. Howard University.

Introduced the idea of spiritness as the light within human beings.

Perkins, D. (1986). *Knowledge as design.* Hillsdale, New Jersey: Lawrence Erlbaum Associates.

A simple, yet powerful method for metacognition, knowledge as design serves as a tool of reflection for students of all ability levels and ages. This book details ways in which a human made object or idea can be discussed in terms of purpose, structure, model case, and argument (explanatory, evaluative, deep explanatory). In addition, this method for critical and creative thinking invites learners to go beyond the four features and invent one's own design when the occasion demands.

_____. (1995). *Outsmarting IQ: The emerging science of learnable intelligence.* New York: The Free Press.

Often overshadowed by the more popular multiple intelligences theory, this book presents a new theory of intelligence, namely, learnable intelligence. The author connects three kinds of intelligences: the traditional IQ, experiential intelligence, and reflective intelligence. The author argues that while native intelligence represented in IQ scores once seemed to be immutable, it can change significantly as the learner gains experience in a domain and practices strategies for reflection.

Perkins, D. (1998). What is understanding? In *Teaching for understanding: Linking research with practice*. Martha Stone Wiske, editor. Jossey-Bass Inc. San Francisco.

Presenting a new perspective in the cognitive development view of understanding, the author argues that schemas do not go far enough to capture understanding. From a performance view of understanding, a learner must create an intellectual product to show that understanding and build new understanding.

Perkins, D. and Unger, C. (1999). Teaching and learning for understanding. In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional theory.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Presenting Harvard University Project Zero research center's teaching for understanding framework as a new paradigm instructional design theory, the authors argue that effecting teaching includes a sound method of planning—one that connects generative topics, throughlines, understanding goals, understanding performances, and ongoing assessments.

Perrone, V. (1998). Why do we need pedagogy of understanding? In *Teaching for understanding: Linking research with practice.* Martha Stone Wiske, editor.

Jossey-Bass Inc. San Francisco.

Providing historical context for improving education in the United States, the author argues that few schools teach for power and consequence. Most students do not get the kind of education that leads to literate citizens capable of solving or posing complex problems with created works.

Piaget, J. (1977). *Studies in reflecting abstraction.* Philadelphia: Taylor and Francis Group.

Providing a theoretical explanation of what it means to understand, the authors present a series of studies leading to the invention of a model—the reflecting abstraction model. Beginning with empirical abstraction the model suggests a spiraling succession of understanding at increasingly complex levels. Thus, empirical abstraction, reflecting abstraction, reflected abstraction, and meta-abstraction all explain a performance view of thinking and understanding in learners of all ages.

Reigeluth, C. Ed. (1999). *Instructional-design theories and models: A new paradigm of instructional theory.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

A compendium of approaches to teaching and learning, this book offers a range of methods to suit most classrooms in the nation.

Richgels, D. (2004). Theory and research into practice: Paying attention to language. *Reading Research Quarterly* 22 (4) 470-477

A review of recent research on language with applications to classrooms, the author presents two categories: formal aspects of language and nonformal aspects. Thus, on the one hand, the author connects research on phonology, morphology, semantics, and syntax. On the other hand, the author explains the role of Haliday's seven functions of language, conversations in language development, and the role of written language in development. Along the way, the author supports the hypothesis of the literacy inside out model.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). *Evaluation: A systematic approach.* Thousand Oaks, California: Sage Publications.

A comprehensive introduction to the evaluation research field, the author argues that evaluation is both an art and a science. In an age of accountability of social programs, it is imperative to conduct sound evaluations at the level of needs assessment, program process, program outcomes, program effectiveness, and program efficiency.

Senge, P. et al. (2000). *Schools that learn. (A fifth discipline field book for educators, parents, and everyone who cares about education).* New York: Doubleday.

Senge pulls together insights from his previous business oriented books to apply his ideas about learning organizations to schools. The book also serves as a compendium, pulling together ideas from numerous deep thinkers such as Howard Gardner, Gary House, and Jay Forrester.

Sternberg, R. (1998a). Principles of teaching for successful intelligence. *Educational Psychologist* 33 (February), 65-72.

Updates his landmark work the triarchic theory of intelligence.

_____. (1998b). Teaching triarchically improves school achievement. *Journal of Educational Psychology* 90 number 3 (September), 74-84.

Extends the triarchic theory of intelligence to specific ways of implementing the theory in to augment student achievement.

_____. and Williams, W. (1998). *Intelligence, instruction, and assessment:* Theory into practice. Mahwah, New Jersey: Erlbaum.

Serves as a compendium for new ideas about thinking classrooms.

Stilger, J. and Hiebert, J. (1999). *The teaching gap. (Best ideas from the world's teachers for improving education in the Classroom).* New York:

The Free Press.

Summarizing one of the most comprehensive research projects ever conducted of the TIMMS international assessment, the authors argue that one of the most important findings is that teacher method relates highly with student achievement. Method is the heart of the invention or reinvention of the thinking classroom.

Stoyles, J. and Sagan, D. (2002). *Up from dragons: The evolution of human intelligence.* New York: McGraw Hill.

In plain English, the authors review brain research on the one hand, and evolution theory of human cognitive development of the other.

Tishman, S., Perkins, D. & Jay, E. (1995). The Thinking Classroom: Learning and Teaching in a Culture of Thinking. Boston: Allyn and Bacon.

In brief, this is the Harvard Model for creating cultures of thinking in classrooms, schools, and districts. Based on 245 years of cognitive research and teacher wisdom, the book details how and why 21st century students benefit from the language of thinking, thinking dispositions, mental management, strategic spirit, higher order knowledge, and thinking transfer each benchmarked with four forces of enculturation, namely, model, explain, interact, feedback.

Watzlawick, P., Weakland, J., and Fisch, R. (1974). *Change: Principles of problem formation and problem resolution.* New York: W. W. Norton Company.

An early systems theory view of change with timeless value, the authors suggest two kinds of change. First order change happens when the parts are moved around and, perhaps changed, but the whole remains the same. This is expressed in the proverb "the more things change, the more they remain the same." Second order change happens when the entire whole changes.

Wiske, M. (1998). What is teaching for understanding? In M. S. Wiske *Teaching for understanding: Linking research with practice.* San Francisco: Jossey Bass.

Providing a somewhat theoretical view of Harvard University Project Zero Research Center's teaching for understanding framework, the author includes applications to curricula frameworks.

Wolfe, P. (2001). *Brain matters: Translating research into classroom practice.* Alexandria Virginia: Association for Supervision and Curriculum Development.

Collects insights about effective brain based education.

Volk, T. (1995). *Metapatterns: across time and space.* New York: Columbia University Press.

Exploring how a fundamental human shape such as the sphere connects geometric objects and ideas, the author presents an array of novel ways to answer Gregory Bateson's timeless question: "What is the pattern which connects all the living creatures?"

Jerry Ellsworth Fluellen, Jr. has but one simple life goal: he wants to fulfill his Dharma. He wants to use all nine of his intelligences for the betterment of humankind.

He serves as an Educational Psychologist in Washington, D. C. and was a Literacy Coach for the District of Columbia Public School system (DCPS).

As a Literacy Coach, he served as a trainer for trainers in DCPS standards, member of the Superintendent's Roundtable for Curriculum, and member of the textbook adoption committee in addition to facilitating study groups for teachers who wanted to invent thinking classrooms at Woodson Senior High School.

While still a Literacy Coach at Woodson, he wrote monthly articles to foster literacy across the curriculum and published newsletters to foster thinking classrooms. The faculty elected him to the School Improvement Team and the principal selected him for the School Leadership Team.

While serving as an Educational Psychologist and with his wife Ingrid, his collaborating Teacher Researcher in the project, he co-designed and co-facilitated the seven workshop series based on the Harvard University model for creating a culture of thinking. The workshops featured African-American Literature and future studies research as culturally relevant pedagogy. These sessions modeled standards-driven thinking classrooms as well.

Together, Jerry and Ingrid presented a talk about the culture of thinking at the DCPS Board of Education Meeting, 12-14-05 and will deliver a talk at the 27th Ethnography and Education Forum at University of Pennsylvania, February 24, 2006.

Educated at Cheyney University, Temple University, University of Pennsylvania, Harvard University, and Howard University, Jerry has published several papers, a book on multiple intelligences, and two curriculum maps in the ERIC international database. Presently, he is a Ph. D. student of educational psychology at Howard University with a concentration in learning and cognition.

He has delivered papers and facilitated workshops at several conferences including eight (8) international research forums in ethnography and education at University of Pennsylvania where he once served as a Spencer Foundation Fellow.

As a member of the Philadelphia Writing Project, he facilitated workshops for teachers also at University of Pennsylvania.

As a member of the District of Columbia Area Writing (DCAWP) project at Howard University, he is the editor of the "Quill and Keyboard" online newsletter and writes DrumTalk, a column to foster thinking classrooms. Additionally, he facilitated workshops about thinking classrooms and has become chair of the DCAWP teacher inquiry grant writing team.

He is a charter member of the Visible Thinking Network at Harvard University and former apprentice faculty member at its world-renowned summer institute "Views on Understanding."

He was twice a merit raise-winning Instructor at Temple University and, as a Grade School Teacher, a finalist for teacher of the year in the Philadelphia Public Schools. He won Teacher of the Year for the Germantown Cluster.

He ended his tenure in the Philadelphia schools as a district, ELA Curriculum Writer, American History Fellow, and "distinguished teacher" in the Enhanced Compensation Program to introduce performance evaluations.

He holds memberships in the District of Columbia Area Writing Project, Philadelphia Writing Project, American Psychological Association, Metropolitan Baptist Church, World Future Society, and Kappa Alpha Psi Fraternity,

Finally, Jerry has been researching a book: Thinking Classrooms in a Flat World.

In researching the book, he is investigating three disciplines (history, psychology, and future studies) to explore an interdisciplinary problem: By 2054, how might the average class become a culture of thinking?