# Think to Learn

(Creating a standards-driven thinking classroom)

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An ELA Teacher and 132 sophomores co-created a prototype for standards-driven thinking classrooms at an urban high school.

Within a time span of October 2005 to May 2006, learners engaged 14 workshops and "The Martian Village—2030", a four-day mini conference. featured 115 students delivered power point slide show talks based on their research papers.

In addition, learners completed a final meeting to play an original game requiring analytical, creative, and practical intelligence—Robert Sternberg's triarchic theory of intelligence. The game involved solving the problem of selecting 100 people for the Martian Village—2030. That's the same problem NASA will actually face when they create a settlement on Mars in the target year.

Based on coded fieldnotes from the first seven workshops, two themes yielded questions for teacher inquiry.

1. **How might a standards-driven thinking classroom be defined, conceptually?**
2. **What happens in a standards-driven thinking classroom?**

## What is it?

A standards-driven thinking classroom has the following features:

- **Uses selected power standards from a district to guide instruction and assessment**
- **Uses a specific framework for teaching thinking**
- **Features culturally relevant pedagogy**
- **Offers an interdisciplinary research project personalized to fit student interests**
- **Includes critical inquiry to reflect on practice**

Holistically speaking, a standards-driven thinking classroom weaves power standards, a framework for teaching thinking, culturally relevant pedagogy, interdisciplinary research, and critical inquiry into a seamless whole.

In brief, in a standards-driven thinking classroom, <u>everyone thinks to learn.</u>

## What happens?

### Background

Tishman, Perkins, and Jay (1995) created a framework for teaching thinking that synthesized much of the work Harvard University Project Zero Research Center had been doing on thinking classrooms.

In their framework, four forces of enculturation and six dimensions of a thinking classroom provided a holistic environment. Good teachers beginning with Inhotep and Socrates knew that learning demanded four forces: explain, model, interact, feedback.

A culture of thinking takes advantage of this practice. The teacher explains ideas, models her thinking, creates classroom interaction, and gives feedback to student recitations (written and oral). But students in a standards-driven thinking classroom engage these forces of enculturation as well. They explain, model, interact, and give feedback to each other and the teacher.

The Harvard framework for thinking classrooms makes explicit a language of thinking, thinking dispositions, mental management, strategic spirit, higher order knowledge, and thinking transfer. (Tishman, Perkins, & Jay, 1995)

That means all learners (students and teachers) pay attention to words that tell the kind of thinking required and gives a standard for doing the thinking well. For examples, hypothesize means to make a prediction about the outcome of an experiment. The word tells what kind of thinking must be done and suggests that only a prediction about outcomes would do the thinking well.

Relatively few words in a language have this kind of power.

Learners in the prototype, for example, identified 88 of such words including, evaluate, metanoia, metacognition, hypothesis, ken, synthesize, analyze, invent, and investigate. But there are more than 88 words representing the language of thinking. When compared to the 800,000 or so words in the Oxford English Dictionary, though, there may be as many as 8,000 words standing as the language of thinking. They are power words. They say a lot with a little. (Fluellen, 2006; Tishman, Perkins, & Jay, 1995)

In a culture of thinking, students develop the habits of mind that support good thinking.

That means they pay attention to five thinking dispositions throughout the life of the prototype.

- Organize thinking
- Reason clearly and carefully
- Think broadly and adventurously
- Be curious and questioning
- Good thinking takes time

A culture of thinking provides focused practice with each of the dispositions. (Tishman, Perkins, & Jay, 1995)

Indeed it took 14 workshops, 90 minutes per workshop to learn the culture of thinking and big ideas of research. Good thinking takes time.

Each workshop organized thinking with Howard Gardner's method for thinking and learning. Each workshop offered learners opportunities to reason clearly and carefully in the quick writes based on higher order thinking prompts. And the teacher encouraged students to be curious and questioning as well as to think broadly and adventurously.

Mental management, the third dimension of a thinking classroom, requires using strategies for thinking well and thinking about thinking. Such strategies can be text book or created, directed at problem solving or decision making, unique to a discipline or cross disciplinary.

Learners in the prototype used the Luke and Freebody model for critical literacy—a strategy for reading texts well. Their model provides four perspectives on a given text (poem, song, story, play etc.). It is primarily for language and literature study.

But students also used extensively a strategy that gave them the power of questioning within and across disciplines. They learned David Perkins' knowledge as design method for critical thinking in English, but they could transfer their use of it to calculus or chemistry.

His method of analyzing objects or ideas was fused with critical analysis essays students of Maya Angelou poems. They wrote the essays as an example of higher order knowledge during the culture of thinking workshops.

Once introduced, they used these two mental management approaches throughout the year. That gave them depth of understanding.

Related to mental management is strategic spirit, the willingness to use strategies in situations that require good thinking.

In a culture of thinking, the teacher encourages learners to be strategic spirits. Many make it. A few continue to struggle with an unwillingness to think well. Most students, though, are touched with possibility that they can be scholars.

Two outcomes from the dimensions and forces are higher order knowledge and transfer of thinking, the fifth and sixth dimensions of a culture of thinking, respectively.

All along learners create works that show what they understand about disciplinary content, its problems, ways of finding truth, and its big ideas. These pieces of higher order knowledge can range from five minute quick-write responses to higher order questions posed in thinking-prompts or a more extensive works such as literary analysis essays, research papers, or power point slide shows.

All along learners are encouraged to transfer previous knowledge gained. The transfer of knowledge to a new situation is what counts as understanding in a standards-driven thinking classroom. That performance view of understanding resonates with Harvard University Project Zero Research Center's work on teaching for understanding. (Blythe, 1999; Wiske, 1999)

Thus, the Tishman, Perkins, & Jay framework for creating a culture of thinking became the first phase of the prototype. Seven workshops taught the six dimensions of a thinking classroom and wove together the four forces of enculturation. (Tishman, Perkins, & Jay, 1995)

"The Martian Village—2030" interdisciplinary research project rooted in district power standard 10.R.1 for writing research papers in MLA style organized the second phase of the prototype. (Fluellen, 2006)

Learners practiced explaining, modeling, interacting, and giving feedback. They practiced using the language of thinking, the five thinking dispositions, strategies for mental management, being strategic spirits, creating higher order knowledge in student works, and transferring thinking from ELA to other disciplines and life.

And in the last seven workshops, they learned the big ideas of research:

- **Research subject**
- **Research topic**
- **Research question**
- **Research plan**
- **Research product (s)**

Finally, "The Martian Village—2030 mini conference in which greater than 100 of the 132 mixed ability students presented power point slide show talks based on their research papers became the last phase—the enactment of transferred thinking.

A bonus, 14th workshop engaged students in a final peer review of model case, student authored research papers scoring high on the Holt rubric. Students explored two 4 (advanced) quality research papers authored by peers. Then, they paired with another student to rate each other's paper with the same rubric the two teacher raters had used.

The story of what happens in a standards-driven thinking classroom drew on fieldnotes and reflections from a participant observer in each of the workshops for the culture of thinking and big ideas of research as well as the mini conference and bonus workshop. Extensive talks with the teacher of record added value to the reflections.

In summary,

115 students ranging from special needs to gifted delivered power point slide shows based on their research papers;

>50% of the students wrote research papers that scored proficient or advanced on the Holt, Rinehart, and Winston rubric; and,

>50% of the students delivered power point slide shows that scored proficient or advanced on the Holt rubric for oral reports.

These told what happened in the first year of the prototype.

Additionally, a case study of one workshop illustrated the story.

**CASE STUDY**
**Transfer of Thinking: Ms. Kazana's workshop seven**

The essential question guiding instruction in Ms. Kazana's seventh workshop was as follows:

How will the 100 people you select create a sustainable Martian Village in the year 2030?
(ELA Research Standard 10.R.1)

Using Howard Gardner's MI approach (a method for active learning based on his multiple intelligences theory), the workshop opened with a power point slide show reviewing the components of a culture of thinking.

Then, students listened to a hip hop recording ("Elevate" by Earth, Wind, and Fire, featuring Floatry).

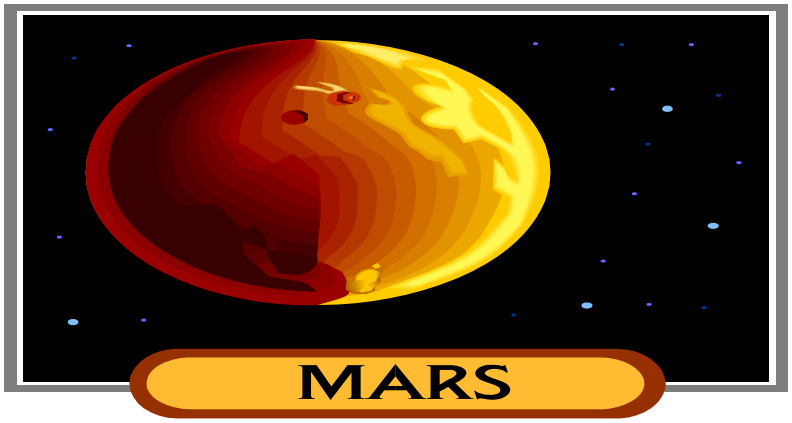
Next they responded to a thinking prompt: "How will I elevate my mind? They did a quick write and self selected students shared their written responses with the whole class.

Finally, the point of entry ended with a check in game involving each member of the class including the two facilitators. Each person said "I am ___, and I am checking in. One way I will elevate my mind is ___.

This point of entry used both music and writing to tap **prior knowledge** and set up **motivation** to engage the workshop goal: introduce the Martian Village—2030 research paper writing project as a tool to transfer thinking about the culture of thinking.

In Gardner's view, the point of entry is vital to active learning. (Gardner, 1999)

While the point of entry drew on musical and verbal linguistic intelligences, the power metaphor began with a picture. On their story board for the workshop, student had a clip art picture of Mars—visual spatial intelligence.




A facilitator invited several students to tell what they saw in the picture. After hearing responses, the facilitator read a brief story and said “note that this story ends with a powerful idea: ‘The future depends on what we do now.’

Using a technique often used in the Black Church, the facilitator said, “Tell your neighbor ‘the future depends on what we do now.’ “

Gardner asserts that a powerful metaphor or analogy can help set up deeper understanding of the concept the teacher wants students to understand. (Gardner, 1999a; 1999b)

In Ms. Kanzana’s workshop seven, she wanted students to understand the real life problem NASA scientists are working on in the space program: create a sustainable village on Mars by 2030. Her visual and verbal metaphors set up the next phase of the MI approach.

Lastly, in the multiple representation phase of the workshop, the facilitator walked students through the project plan, paying attention to the essential question, engaging scenario, ELA power standard 10.R.1, Gardner and Boix-Mansila’s standards for doing interdisciplinary research, and the greater than one dozen research subjects used to personalize the project for each of the 132 students. (Gardner and Boix-Mansilla, 2005; Fluellen & Fluellen, 2006)

As part of multiple representations, the workshop ended with students applying a set of critical thinking questions to a Carousel Game that explored the project.

Two students representing the six classes, spoke at the February 15, 2006 meeting of the Board of Education. They offered the Superintendent of Schools and Board of Education members a sample of student responses to the critical thinking questions in the Carousel Game.

To create the game responses, students in each of the six classes engaged the following:

Problem: How might we analyze “The Martian Village---2030” project plan with the knowledge as design method of critical thinking?

In teams, answer the following knowledge as design questions. (Jigsaw strategy/ answer two questions per team)

Purpose: Why are we writing a research paper about a sustainable village on Mars in the year 2030? 1 & 4

Structure: How does the ELA Research Standard 10.R.1 organize the project? 2 & 4

Model Case: How might this project be like the Science Fair project you are about to do? 3 & 4

Argument: How will writing a research paper and creating a power point slide show to share your research findings elevate your minds?

Report findings in a Carousel Game.

The workshop ended with students checking out.

Check out game

My name is _____and I’m checking out. I will elevate my mind by _____.

Gardner’s MI approach organized thinking for the students and provided ongoing assessments of understanding. It synthesized the four forces of enculturation and six dimensions of the thinking classroom.

Ms. Kazana used the workshop itself as a transition from learning how to be a standards-driven thinking classroom to being a standards-driven thinking classroom. Learners would transfer their thinking about a culture of thinking to the big ideas of writing a research paper in the subsequent seven workshops.

## Conclusion

So what does happen in a standards-driven thinking classroom?

The bread and butter method for teaching is active, namely Howard Gardner' MI approach based on multiple intelligences theory. That frames each of the 14 workshops and spills over to regular English lessons in Ms. Kazana's six classes.

Power standards, a specific framework for teaching thinking, culturally relevant pedagogy, research project for students, critical inquiry for teachers all weave a single quilt.

>50% of Ms. Kazana's students wrote research papers that scored proficient or advanced on Holt's rubric for tenth grade research papers.

Likewise, >50 of her students delivered power point slide show talks that scored proficient or advanced on Holt's rubric for oral reports.

Those levels of proficiency exceed both the expectations of a normal curve and the 2006 mandate of No Child Left Behind.

115 student out of possible 132 students across six classes participating in "The Martian Village—2030" mini conference delivered power point slide show presentations based on their research papers. These included special needs and gifted students alike.

Ms. Kazana may want to examine results from two other summative assessments for additional data about what happens in a standards-driven thinking classroom.

Do the mean DCCAS scores for her students differ from the mean scores of other tenth graders in the district? She can compare scores from her students with students who did not engage an explicit approach such as a standards-driven thinking classroom. If the mean score for her students is significantly greater than the district mean scores on this city wide measure, she can say there might be a relationship between higher scores and systematic instruction in a standards-driven thinking classroom.

Does the mean score for the post test Gates MacGinitie differ from the mean pre test score?

Likewise, if student post test scores on this valid measure of reading comprehension are significantly greater than the mean scores on the pretest, she can argue that there is a strong positive relationship between treatment and scores.

Whether she examines results of the district-wide assessment or an assessment of reading comprehension, Ms. Kazana can learn more about what happens in a standards-driven thinking classroom from standardized measures as well as student portfolios of best works.

Presently, it is worth noting that about one third of Ms. Kazana's students earned an A or B on the final report card for English. They are advanced and proficient. She has a working model for getting each one of her students to be equal to or greater than proficient by 2014—the year No Child Left Behind has deemed that all children in our nation's public schools be so competent.

Of course, this has been the story of a **prototype** for a standards-driven thinking classroom. As it is with a concept car for Mercedes Benz, much work must be done before the prototype can hit the road.

Her new question for the next phase of development might be this:

How do students make thinking visible?

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