# Mobile Critical Thinking Methods and Models

## for Equity in Teaching and Learning

**Robert Seth Price**

**www.eggplant.org**

***Education is a Human Right***

*United Nations Universal Declaration of Human Rights*

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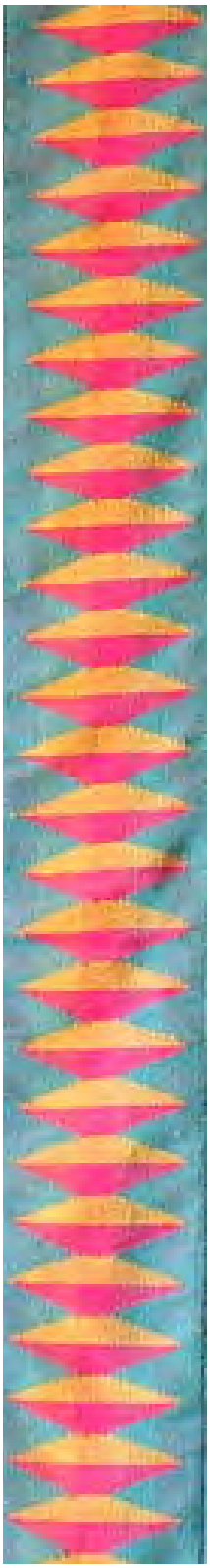
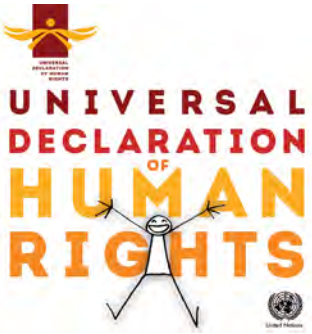


# Human Rights




Fostering and protecting global human rights require macro-level innovative methodologies. The use of mobile thinking tools is a state of the art methodology that is applicable to a multitude of diverse settings and social problems. Not only would mobile thinking tools allow grassroots organizations to mobilize people and advance their agendas, but they would also allow for an integration of an organization's sociopolitical actions with policy. For instance, human rights is a term that many understand on the surface, but few understand how to actually define, preserve, and advocate for them. Thinking tools, however, allow people to methodically identify, strategize, and take action to protect human rights, for example, by using an inclusive methodology. This methodology allows for persons (top-down and down-up) to engage, interact, critically think, problem solve, and implement ideas as a community. The resulting process is formulated to yield results related to policy change and subsequent implementation of such policy.

# Human Rights and Social Justice

In 1948, the United Nations General Assembly issued the Universal Declaration of Human Rights (UDHR) in an attempt to bring attention to the inalienable rights of all people in all nations as agreed upon by its signatories (United Nations, 1948). Human rights are broadly defined as the "basic rights and freedoms that all people are entitled to regardless of nationality, sex, national or ethnic origin, race, religion, language or other status" (Amnesty International USA, 2015, para. 1). The Universal Declaration of Human Rights contains 30 articles that address civil, political, economic, social, and cultural rights of people worldwide (United Nations, 1949). Article I of the UDHR states that all humans are equal in dignity and worth. Articles 2 -15 address political and individual freedoms (e.g., right to life, right to liberty, right to live free of enslavement, right to live free of torture, right to equal protection of the law, right to seek asylum, right to a nationality, etc.). Articles 16-27 address economic, social, and cultural rights (e.g., right to marriage as adults, right to own property, right to religious expression, right to freedom of opinion and expression, right to social security, right to work, right to an education, right to a just standard of living, etc.). Articles 28 and 29 address collective rights among and between nations (i.e., right to a social and international order; right to live a full life within the confines of the law). Last, Article 30 states that no one can take away a person's human rights (United Nations, 1948).

# Universal Declaration of Human Rights: Article 26

(1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all...

(2) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms...

(3) Parents have a prior right to choose the kind of education that shall be given to their children.

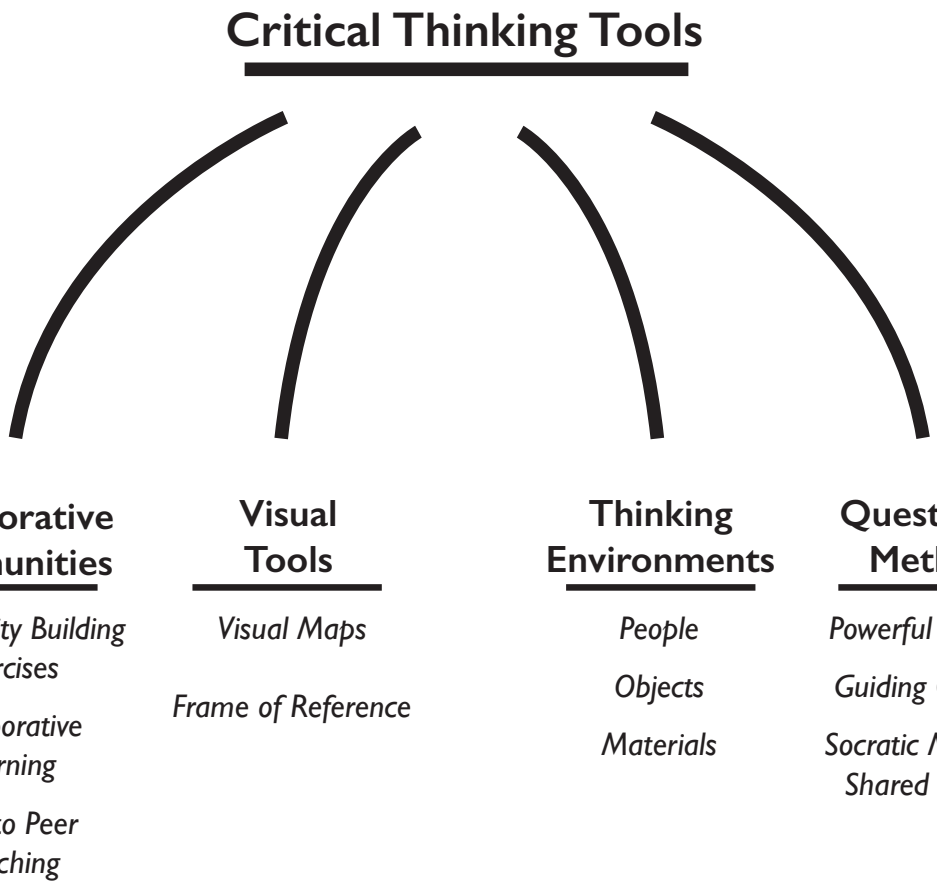
# Human Rights and Mobile Critical Thinking Tools

Article I of the United Nations Universal Declaration of Human Rights states: All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

All humans deserve to have and enjoy equality in dignity and rights. For equality, all humans must have equal access and opportunity to practical tools and methods for critical thinking with their daily actions. Critical thinking methods and skills provide equality for the full realization of participation in the greater human community locally and globally. Methods and tools that assure each human an equal opportunity for active and high impact participation in education, with healthcare and for their greater community. The purpose of this guide on Mobile Thinking Tools is to model the importance of putting theory into practice with practical methods, how to learn the methods, and models of excellence. Concurrently the guide connects the research behind the practical methods thoughtfully using them in practice for understanding both the tools (the how) and the research (the why).


*Photo - United Nations*

# Mobile Critical Thinking Tools: An Overview




The following four pillars of critical thinking are models of practical methods that are the core of developing critical thinking skills.

- **Collaborative Communities** are three supporting methods of collaborative tools for individual and collaborative success. These include: community building exercises and models, collaborative learning methods and peer-to-peer coaching.
- **Questioning Methods** are used to engage students in curiosity, exploration, discovery and discussions. This includes effective methods for developing questioning skills leading to inquiry based shared inquiry.
- **Open Source Visual Mapping** is for organizing and understanding thinking individually and collaboratively. The maps support recognizing patterns of thinking along with the frame of reference to understand different perspectives.
- **Thinking Environments** is an awareness, understanding and a process focused on the design, interface and impact of the environment including a person's use of space, materials, and objects.

# Defining Critical Thinking: The Tools for Skills

Food for thought: What exactly is critical thinking? How do we define critical thinking? What are the practical tools to put research and theory into practice? What is the educator's role in teaching and modeling critical thinking in a learning community? How do we foster critical thinking with equity for all students of all ages, diversity and in all classrooms?

It is vital to examine current research on Critical Thinking to provide context and understanding. Recent research from several publications with different perspectives and educational audiences are shared to consider the importance of life long critical thinking tools and skills. It is recommended to read and collaboratively explore each research abstract on the following pages: first individually, then as a team together. Below is a suggested method of exploring each research abstract using the critical thinking tools in this guide.

1. Select a key word(s) and/or phrase from the research and use that word(s) as an anticipatory set to develop background knowledge, surface assumptions and learn from questions.

2. Use Powerful Questions and/or Collaborative Questions (see both in this guide) to surface background knowledge and curiosity. In small groups, put individual questions on small pieces of paper to develop an inductive sorting of the different questions into categories (see section on inductive and categorization mapping).

3. Everyone reads the research abstract individually or in pairs. Have each group frame their categorization map (see Frame of Reference in this guide) of the questions with observations from reading the abstract.

4. How does this research connect with our student's success? What do we as teachers need to implement, practice and model to develop our student's critical thinking?

5. How will we assess our needs and progress?

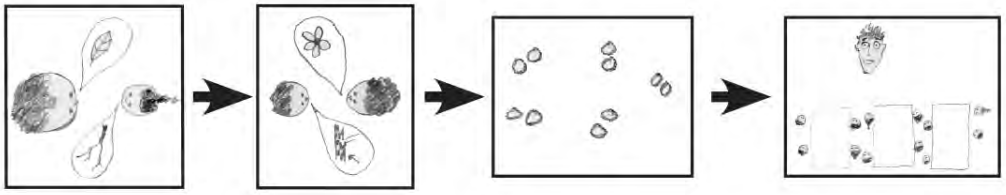
# Defining Critical Thinking: The Tools and Skills

## An Example of a Group Study

**1.** Select and use a key word/phrase from the abstract: e.g. 'cognitive exercises'

- *Questioner A: What cognitive processes are important?*
- *Questioner B: How do we make cognitive processes into exercises?*
- *Questioner A: How often should we do the exercises?*
- *Questioner B: How do we practice the exercises?*
- *Questioner A: Are the cognitive processes best learned together?*

### Collaborative Questioning

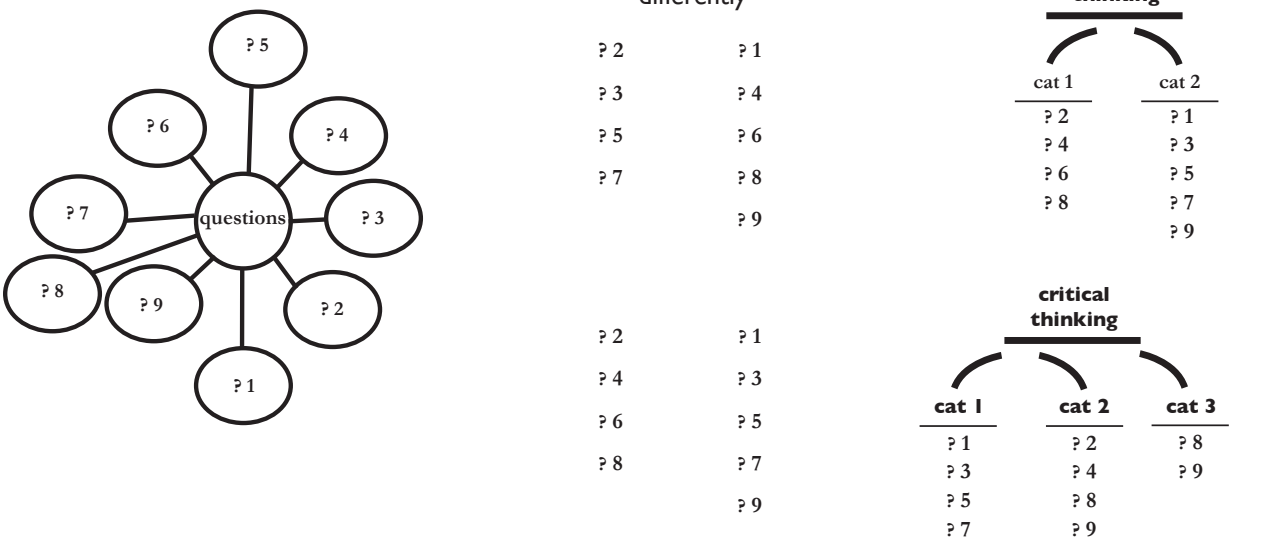


teacher models with a student | two students model | all students in pairs | sharing with the whole group

**2.** While sorting the questions, think about how each group member's experiences enhances the shared learning.

**Brainstorming the Questions** → **Sorting by Category** → **Category Headings**

different small groups can sort differently




? = question

# Defining Critical Thinking: The Tools and Skills

**3.** Read the research abstract.

**Critical Thinking in the University**

**Developing Critical Thinking Skills: Assessing The Effectiveness of Workbook Exercises**

*Journal of College Teaching & Learning – Second Quarter 2015*

Elise D. Wallace, The Citadel: Military College of South Carolina, USA

Renee N. Jefferson, The Citadel: Military College of South Carolina, USA

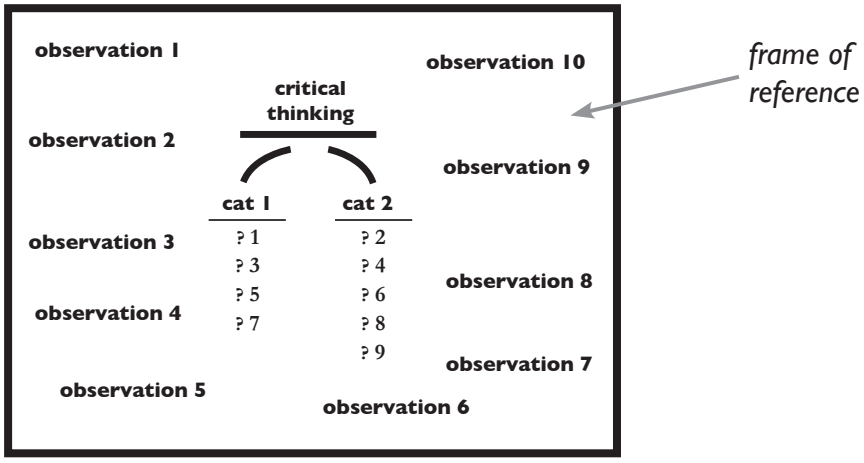
**Abstract**[1]

To address the challenge of developing critical thinking skills in college students, this empirical study examines the effectiveness of cognitive exercises in developing those skills. The study uses Critical Thinking: Building the Basics by Walter, Knudsvig, and Smith (2003). This workbook is specifically designed to exercise and develop critical thinking skills. The authors use it as the intervention tool. Freshman students enrolled in a first-year experience course participated in the study; one group used the book, the other did not. Students spent a few weeks in class working through the problems, and at the end of the semester, both groups completed the Critical Thinking Skills Test. Analysis of final test scores prove the effectiveness of exercises on improving the critical thinking skills of college freshmen.

*Keywords: Critical Thinking; Exercises; College Students; Assessment*



**4.** Using a frame of reference around the questions




**5.** How does this research connect with our student's success? What do we as teachers need to implement, practice and model to develop our student's critical thinking? Add this to the *frame of reference* in the Tree Map (categorizing).

# Research on Critical Thinking Tools and Skills

## School Librarians are Well Positioned...
## Focusing on the Integration of Critical Thinking

**Traditional Literacy and Critical Thinking:** *American Library Association, Volume 44, No. 5 | May/ June 2016,* Priscille Dando, Coordinator of Library Information Services, Fairfax County (VA) Public Schools, AASL.

**Excerpts**: School librarians should welcome this shift away from the "student as vessel" model of teaching to a more constructivist model intent upon developing critical-thinking skills that enable students to make their own meaning for deeper understandings (Rainie 2014). How students show what they can do with that knowledge and how they demonstrate application of learning processes in real-world situations are the best indicators of their future success. Research shows interactive read-alouds as part of a balanced literacy approach increase comprehension, support students' content background knowledge, boost vocabulary, and assist in development of independent reading and writing of similar texts (Cummins and Stallmeyer-Gerard 2011). A significant benefit of interactive read-alouds is how they encourage students to think actively before, during, and after reading.
When students engage in a meaningful conversation about a book's ideas and presentation, they are empowered to articulate connections and make their thinking visible to others (Hilden and Jones 2013).
*Key Words: Extend Students' Thinking by Encouraging Them To Make a Connection, Use Text, Practice, Self-Monitor, Think Aloud, Explore*

## Elementary School Critical Thinking

**Program Development for Primary School Teachers' Critical Thinking**
International Education Studies; Vol. 10, No. 2; 2017, ISSN 1913-9020 E-ISSN 1913-9039
Published by Canadian Center of Science and Education
Waraporn Boonjeam1, Kowat Tesaputa1 & Anan Sri-ampai, Faculty of Education, Mahasarakham University, Mahasarakham, Thailand

**Abstract:** The objectives of this research were: 1) to study the elements and indicators of primary school teachers' critical thinking, 2) to study current situation, desirable situation, development technique, and need for developing the primary school teachers' critical thinking, 3) to develop the program for developing the primary school teachers' critical thinking, and 4) to study the findings of usage in development program for primary school teachers' critical thinking by using Research and Development. The samples were 384 primary school teachers, and 34 volunteered teachers to participate in development by using questionnaire, evaluation form, and tests. The statistic using for data analysis included the percentage, mean, standard deviation, modified priority needs index (PNImodified), and t-test. The research findings found that: 1) the elements and indicators of primary school teachers' critical thinking consisted of 3 elements and 12 indicators of critical thinking ability, and 6 elements and 24 indicators of critical thinking disposition, 2) the current situation of primary school teachers' critical thinking was in "High" level, for desirable situation, it was in "The Highest" level, 3) the development program,
consisted of: the principles, objectives, contents, and development activities included 4 Parts, Part 1: the readiness preparation, Part 2: training, Part 3: integration with work practice, and Part 4: posttest, and measurement and evaluation. 4. The post test score was significantly higher than the pretest score at .01 level.
*Keywords: critical thinking, primary school teachers, development program*

# Critical Thinking Models: The Four Pillars Overview

## Collaborative Communities

A collaborative community learns with and from one another. Like any experience, intentionality of actions and practice is imperative with the methods of collaboration. The collaborative process include three key areas: community building exercises, peer to peer coaching and collaborative learning methods.

**Community Building Exercises**

Building community exercises involves developing the whole community together for understanding one another, learning how to collaborate collectively, developing listening for learning, and other methods for the whole school community collectively learning with one another.

**Peer to Peer Coaching**

Peer to Peer Coaching involves teachers creating their own professional coaching community. It includes regularly observing each other throughout the whole school with a focused protocol to support seeing each other's professional skills. The goal is learning professionally from one another in quest of the finest craft and pedagogy for student outcomes.

**Collaborative Learning Methods**

Collaborative learning builds relationships among students (and teachers with teachers) that requires positive inter-dependence (a sense of sink or swim together), individual accountability (each of us has to contribute and learn), interpersonal skills (communication, trust, leadership, decision making, and conflict resolution), face-to-face promotive interaction, and processing (reflecting on how well the team is functioning and how to function even better).

## Questioning Methods

The use of questions are used in many fields including the sciences, journalism and many more. They are a gateway of curiosity with learning, and an insightful and effective way of understanding. Questioning is a key means by which teachers and students find out what they already know, identify gaps in knowledge and understanding, and scaffold the development of their understanding to enable them to close the gap between what they currently know and the learning goals.

We ask questions regularly. There are several types of questions:

- factual
- evaluative
- interpretive

*Statements and Questions*

Statements are 'answers' that signal a stop in thinking with a final answer. Questions are a driving force in the process of thinking. One asks questions to stimulate thinking. The art of questions like any skill takes practice of the finer points to achieve mastery. We will focus on bringing questioning into the classrooms critical thinking by scaffolding supportive strategies:

- Powerful Questions
- Collaborative Questions
- Socratic Method for Shared Dialogue with Classroom Discussions

# Critical Thinking Models: The Four Pillars Overview

## Visual Mapping


Visual tools are a means of graphically and visually representing ideas, conceptual relationships and progression paths. They range from the simple spider diagram, flow chart or time line – to more sophisticated models of concept mapping which can be used to explore complex relationships and perceptions. Thinking Maps is a language that provide students with choices of eight visual maps that represent how humans think cognitively (brainstorming; cause/effect; sequence; compare/contrast; categorization; relationships...). Each map can be further developed with a frame of reference. Thinking Maps are a critical thinking tool that is most effectively used when students have the ownership of choosing the Thinking Map(s) that best represents their cognitive choice. Thinking Maps organize thinking for understanding, writing, presenting, and understanding each other's thinking. The steps of implementation in a classroom include:

- Introducing all eight Thinking Maps to learn the tool using pictures, words and other representations for all grade levels.
- Introducing the Frame of Reference for Thinking Maps and other visual tools.
- Learning hand symbols for each of the Thinking Maps.
- Students choosing the Thinking Map that best represents how they are organizing their thinking (student centered ownership).
- Integrating Thinking Maps across all subjects and content.

## Critical Thinking Environments

Critical Thinking Environments, is an awareness, understanding and a process focusing upon the design, interface and impact with the environment of the physical learning space. An awareness with **intentionality**. The environment is **The Third Teacher** where we focus on designing the physical space with the **Frame of the Student** as a root understanding. The **in the eyes of the student** respects and understands the **children's frame of reference** in regards to how children see, sense, use and interface within the environment, and how the teacher is intentional with their choices, decisions and actions in respect to student engagement and successes with learning. The key components of focus for a successful teaching environment include:

- **People** including proximity of the teacher with students and how we choreograph the flow of people.
- **Objects** in the classroom including furniture, lighting and all objects that influence in regards to their design and use.
- **Materials** used including choices and use of natural and recycled things.

The teacher's decisions with intentionality impact the classroom and school's environment. They are crucial to the quality outcomes of the children and youth's learning experiences and how they model with the children, and become a model to how students learn.

# Chapter 1: Collaborative Processes

## Community Building Exercises

## Peer to Peer Coaching

## Collaborative Learning Methods

"In order for this to happen, your entire frame of reference will have to change, and you will be forced to surrender many things that you now scarcely know you have."
—*James Baldwin, The Fire Next Time*

# Collaborative Processes for Communities

A collaborative community opens the learning community to building relationshiops with and from one another. Like any learning, intentionality is important with implementation for the methods of learning. The collaborative processes for community includes community building exercises, peer to peer coaching and collaborative learning methods:

## Community Building Exercises

Building community exercises is about building the whole community for understanding one another, learning how to collaborate together, developing listening for learning, and other methods for the whole school community collectively learning with one another.

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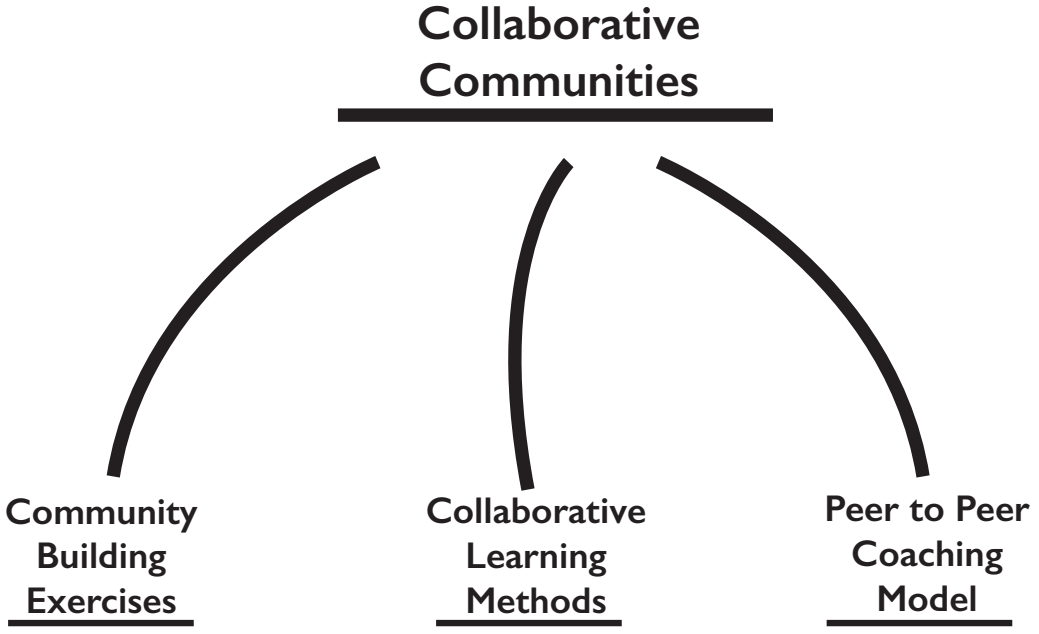


# Research on Relationships in School Communities

Read the following article on research for building relationships for school communities:
*Why Relationships, Not Just Money, Are The Key To Improving Schools*
*Study Finds Social Capital Has 3-5 Times The Impact Of Funding*

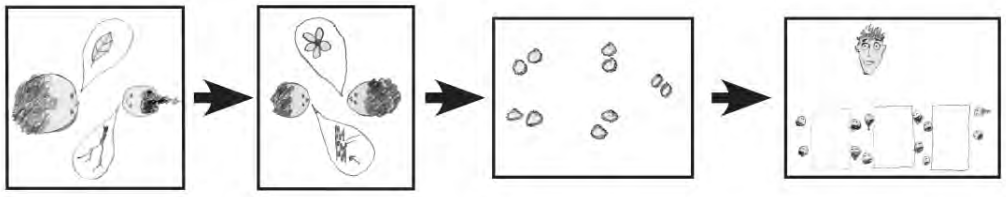
**Guiding Questions**

- What are your questions after reading this research?
- How does this research apply to your school?
- How would you map out a plan to implement practical tools and practices to support the quality of the school's social capital?

**Research in Action**

1. Use Collaborative Questions (see in this guide) to respond to: What are your questions from reading this research? Then in small collaborative groups write several questions from the Collaborative Questioning exercise with each question on a separate piece of paper to sort (see the categorization map and section on inductive sorting). Sort the questions into categories. Label a top question for each category.
2. Use a visual tool to map: How does this research apply to your school? Possible maps include brainstorming, cause and effect, comparing or a map that supports your thinking.
3. What are the steps and parts of the steps to implement a plan? Use a sequence map to create a timeline.

**Collaborative Questioning**



teacher models with a student | two students model | all students in pairs | sharing with the whole group

*Drawings in sequence models by Patrick Percy*

# Research on Relationships in School Communities

## Why Relationships, Not Just Money, Are The Key To Improving Schools
## Study Finds Social Capital Has 3-5 Times The Impact Of Funding

*by Jeff Grabmeier, The Ohio State University News*

Strong relationships between teachers, parents and students at schools have more impact on improving student learning than does financial support, new research shows.

> Serena J. Salloum, Roger D. Goddard & Dan Berebitsky (2018):
> Resources, Learning, and Policy: The Relative Effects of Social and Financial Capital on Student Learning in Schools, Journal of Education for Students Placed at Risk (JESPAR), DOI:10.1080/10824669.2018.1496023

Social capital is the name scientists give to the network of relationships between school officials, teachers, parents and the community that builds trust and norms promoting academic achievement. The study found that social capital had a three to five times larger effect than financial capital on reading and math scores in Michigan schools.

"When we talk about why some schools perform better than others, differences in the amount of money they have to spend is often assumed to be an explanation," said Roger Goddard, co-author of the study and Novice G. Fawcett Chair and professor of educational administration at The Ohio State University. "We found that money is certainly important. But this study also shows that social capital deserves a larger role in our thinking about cost-effective ways to support students, especially the most vulnerable."

Goddard conducted the research with Serena Salloum of Ball State University and Dan Berebitsky of Southern Methodist University. The study appears online in the Journal of Education for Students Placed at Risk and will be published in a future print edition. The study involved 5,003 students and their teachers in 78 randomly selected public elementary schools in Michigan. The sample is representative of the demographics of all elementary schools in the state. Teachers completed a questionnaire that measured levels of social capital in their schools. They rated how much they agreed with statements like "Parent involvement supports learning here," "Teachers in this school trust their students" and "Community involvement facilitates learning here."

State data on instructional expenditures per pupil was used to measure financial capital at each school. Finally, the researchers used student performance on state-mandated fourth-grade reading and mathematics tests to measure student learning. Results showed that on average schools that spent more money did have better test scores than those that spent less. But the effect of social capital was three times larger than financial capital on math scores and five times larger on reading scores.

# Research on Relationships in School Communities

"Social capital was not only more important to learning than instructional expenditures, but also more important than the schools' poverty, ethnic makeup or prior achievement," Goddard said. While social capital tended to go down in schools as poverty levels increased, it wasn't a major decrease. "We could see from our data that more than half of the social capital that schools have access to has nothing to do with the level of poverty in the communities they serve," he said. "Our results really speak to the importance and the practicality of building social capital in high-poverty neighborhoods where they need it the most."

The study also found that the money spent on student learning was not associated with levels of social capital in schools. That means schools can't "buy" social capital just by spending more money. Social relationships require a different kind of investment, Goddard said.

The study can't answer how to cultivate social capital in schools. But Goddard has some ideas.

- One is for schools to do more to help teachers work together. "Research shows that the more teachers collaborate, the more they work together on instructional improvement, the higher the test scores of their students. That's because collaborative work builds social capital that provides students with access to valuable support," he said.
- Building connections to the community is important, too. School-based mentoring programs that connect children to adults in the community is one idea.
- "Sustained interactions over time focused on children's learning and effective teaching practice are the best way for people to build trust and build networks that are at the heart of social capital," Goddard said.
- "We need intentional effort by schools to build social capital. We can't leave it to chance."

**Research Paper Abstract**

In this paper, we note the contrasting positions occupied by social and financial capital in state and federal education policy and compare their relative impacts on student learning. To make such a comparison, we analyzed data from a representative sample of Michigan's elementary schools using multilevel structural equation modeling to examine the relationships among social capital, instructional expenditures, and student achievement. We found that the level of social capital characterizing schools was not a function of instructional expenditures. We also found that both social and financial capital had a positive and significant relationship with reading and mathematics student achievement. However, the effect of social capital was three and five times larger than that of financial capital on mathematics and reading, respectively. We discuss the implications of these findings for education policy and programs that might improve student learning by strengthening social relationships.

*Keywords: social capital, community, student achievement, relationship, education policy*

**Complete Research**

Serena J. Salloum, Roger D. Goddard & Dan Berebitsky (2018):
Resources, Learning, and Policy: The Relative Effects of Social and Financial Capital on Student Learning in Schools, Journal of Education for Students Placed at Risk (JESPAR), DOI:10.1080/10824669.2018.1496023

# Collaborative Learning Methods

Collaborative Learning Methods is a relationship among co-workers and students developing:

- **positive interdependence** (a sense of sink or swim together),
- **individual accountability** (each of us has to contribute and learn),
- **interpersonal skills** (communication, leadership, decision making, & conflict resolution),
- **face-to-face promotive interaction, and processing** (reflecting on how well the team is functioning and how to function even better).

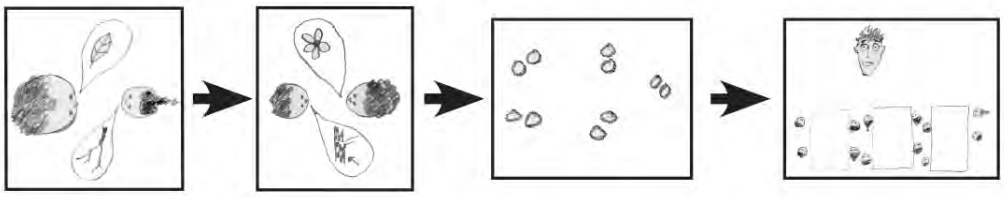
**Think-Pair-Share**

With Think-Pair-Share, the teacher poses a question or topic, preferable one demanding analysis, evaluation, or synthesis, and gives a person about a minute to think through an appropriate response. One person then turns to a partner and they share their responses.

**Think Pair Share in Action**

- **facilitator models with participant —** The facilitator/teacher can model behaviors such as what to do when you don't know ideas or how to thread an idea from your partner.
- **two participants model —** The two students model understanding of the process and the classroom will be more attentive with the process watching their peers.
- **all participants paired up —** All involved holding all accountable.
- **whole group shares —** Have one person share one thing, then pick a student from a different location in the room.

**Think Pair Share**

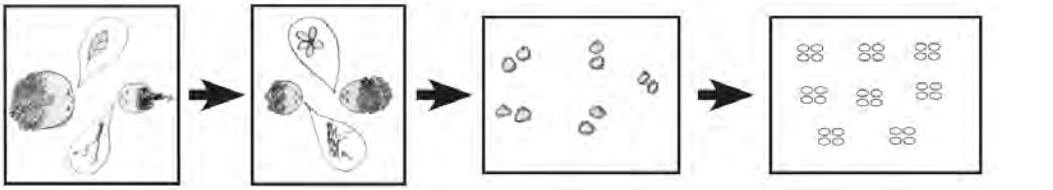


teacher models with a student | two students model | all students in pairs | sharing with the whole group

*Doing Think Pair Share video as in the diagram.*

In the extension below with quartets, when participants A&B join C&D,
A shares something learned from B, B from A,
C from D, D from C, back to A from B, and so forth...

**Sharing in (a) Pairs, (b) Fours, (c) Whole Group**



teacher models with a student | two students model | all students in pairs | quartets – each pair shares about the other person in a group of four

*Think Pair Share First Grade Video*

*Think Pair Share Third Grade Video*

# Collaborative Learning Methods *continued*

**Three-Step Interview**

Common as a team-building exercise, this structure can also be used also to share information such as hypotheses or reactions to a film or article.

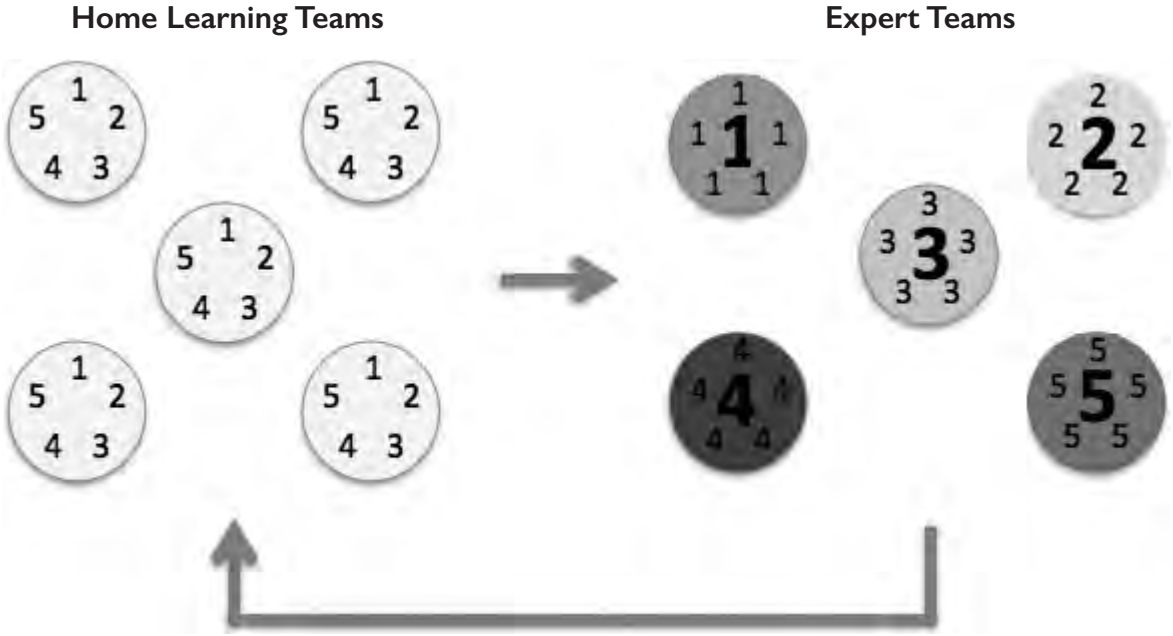
- People form pairs; one person interviews the other.
- People switch roles.
- The pair links with a second pair. This four-member learning team then discusses the information or insights gleaned from the initial paired interviews.

**Learning Teams**

Members of learning teams, usually composed of four individuals, count off: 1, 2, 3, or 4. The instructor poses a question, usually factual in nature, but requiring some higher order thinking skills. People discuss the question, making certain that every group member knows the agreed upon answer. The instructor calls a specific number and the team members originally designated that number during the count off respond as the group spokesperson. Because no one knows which number the leader will call, all team members have a vested interest in understanding the appropriate response. The verbalization and the peer coaching helps all learners become actively involved with the material.

**Simple Jigsaw**

The facilitator divides an assignment or topic into four parts with all people from each Learning Team volunteering to become "experts" on one of the parts. Expert Teams then work together to master their fourth of the material and also to discover the best way to help others learn it. All experts then reassemble in their Home Learning Teams where they teach the other group members.



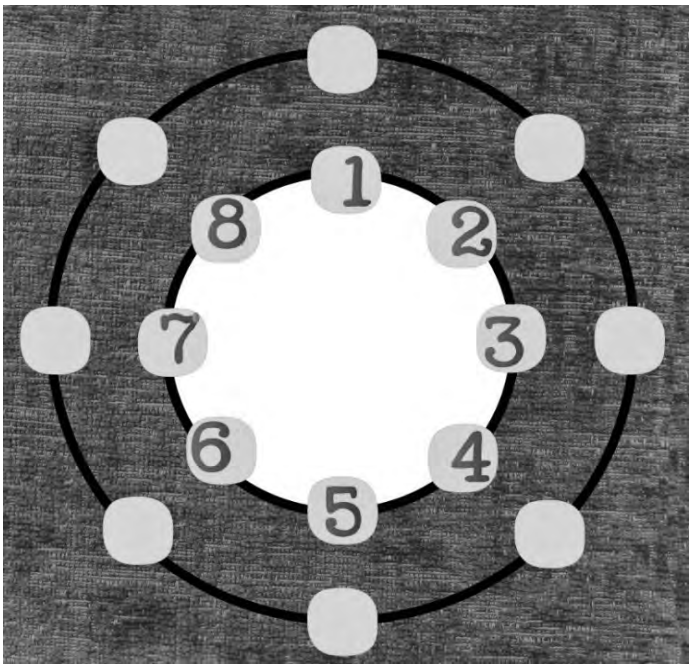
# Collaborative Learning Methods: Fishbowl

**How It Works:**

- Divide your class in half:
  —one half will form the center circle, facing inward.
  —the other half of the class will form the outer circle, facing inward as well.
- The students in the inner circle will discuss a predetermined topic.
- The outside circle will be listening to the discussion, taking notes and developing questions. They are only quiet observers at this point.
- The inner and outer circles then switch positions and repeat the steps above.

**Why It Works:**

- Eases Discussion Management: because only half the class is discussing at a time, this makes it much easier to manage than a whole-class discussion.
- Promotes Active Listening: half the students have the specific role of listening to the inner circle. They understand that their turn to talk will come, which focuses them on active and attentive listening.
- Great for Discussion: the physical position of students makes it very clear when it's time to listen and when it's time to talk. You can switch through the roles a number of times during the discussions, and students have more incentive to listen when they are in the outer circle so that they can appropriately counter the points made from the inner circle.
- Peer Evaluation and Modeling: This model presents a valuable opportunity for students to evaluate their peers. Successful student presenters also serve as models to other students who are learning skills with class discussions.



# Building Community Exercises: Team Building

## Overview

Team building exercises build community, develop listening skills and support student engagement. They are a great way of improving communication, morale, motivation, productivity, helping students and educators to get to know each other better, and learning about one's strengths and weaknesses. Community building is the foundation of a student centered classroom.

Community building exercises have their roots in theater and the stage. In theater, the team must be collaborative with no one 'dead to the scene'. Drama and street theater can teach and enlighten us thoughtfully with team building. Augusto Boal is the Brazilian dramatist who, during over forty years of work in different parts of the world, has developed the techniques of Theatre of the Oppressed. His successful building of community is a model for a successful classroom. Boal begins with the principle that theatre, like language, can be appropriate to anybody so long as the methods are passed on to them. It is this teaching role that Theatre of the Oppressed sets out to achieve. Through series of exercises, games, techniques and drama forms (of which Forum Theatre is the most commonly used), the aim is to understand social reality, and to then be able to change it (for equality and positive outcomes).

In classrooms drama games, what we call community team building exercises, are used to:

- develop a classroom team
- have students and educators aware of each other
- learn to focus on each other
- learn the social manners and reality of the classroom
- change for the positive the classroom team
- have students become the autonomous leaders of the classroom

The goal is to have everyone involved with the community team building exercises with a focus upon student engagement using the exercises as a foundation for the classroom.

While many community building exercises score high on the fun factor and do create some shared memories, they must also deliver an outcome of a stronger team. It is important to be meaningful and challenging with exercises that often is completely outside our context and comfort zone to really elevate the classroom community as a team of learners both individually and together.

The examples of team building exercises in this guide are an introduction. It is recommended to seek out more exercises in published books, on the Internet and by taking classes locally including with theater and improvisation classes.

# Building Community Exercises: Team Building
## *Learning About Each Other Together*

### Mingle
The group mingles, casually talking to each other. As they continue mingling, you call out a name of a category, like pets. The players then have to find other people who have that in common with them. Other categories you can try are: someone with the same number of brothers and sisters as you, someone with the same color eyes as you, or someone with one of your hobbies. Let one of the players take your place and be the leader who can call out the categories.

### People to People
Everybody mingles around, greeting one another normally (thus the title "People to People"). You, as the leader, stop movement by proclaiming "elbow to elbow!" or "knee to ear!" The group must form whatever configuration you say by finding someone to touch elbows with or a knee to put an ear on. When you say "people to people," the mingling and greeting begins again. The game becomes more creative when you announce animal configurations, like "Elephant to Elephant!" or "Snake to Snake!" or "Alien to Alien!" These can lead to "Trunk to Trunk!" and "Tail to Tail!"

### In Common *or* Commonalities
Participants face the inside of the circle on their individual spots. One person (start with the lead facilitator modeling several times, then each person will do it once) will state something true about themselves. An example might be "I have taken guitar lessons." Then everyone who has this "In Common" with the person who stated "I have..." will leave their spots and trade with someone else. This is followed by another person sharing something true about themselves. Then everyone who has this "In Common" with the person who stated "I have..." will leave their spots and trade with someone else.

### I Love My Neighbor
Participants face the inside of the circle on their individual spots, except for one person, for example Langston, who is "It" and stands in the middle. Langston starts by saying "I love my neighbor who...," finishing with a characteristic or description, such as, "I love my neighbor who has an older brother." Then all the participants to whom this is true leave their spots and trade with someone else. Langston then scrambles for the open spaces, and whoever is left without a seat is the new "It" and must begin again saying "I love my neighbor who..." Each person who is "It" is not allowed to repeat any of the other things previous "Its" have said.

### Trust
Participants are in pairs. They will connect with hands (you could also do it with elbows, fingers, etc.). One person will close their eyes and the leader will keep their eyes open. They will then start walking together. It is the responsibility of the leader with the eyes open to lead the other person who is trusting them on a safe path while they are walking around. Initially do for short segments (e.g. 30 seconds), then have the pairs switch who is the leader.

# Building Community Exercises: Team Building

## *Focus and Concentration*

### Zoom

In a circle students orally pass the word *zoom* around from one person to another. The exercise moves rapidly to build and sustain community involvement. Extensions include switching directions, multiple zooms at one time, students leading zoom, use of different polygons to form the 'circle' (e.g. square), & other words to build vocabulary. Initially introduce with students sitting in a circle. Changing it up: Instead of voice, use a gesture and/or sign language.

**Zoom EEK -** In a circle students orally pass the word *zoom* around from one person to another. Introduce the word EEK to everyone—means stop and go the other direction. When the leader says EEK whoever has the zoom changes direction.

### Movin' in Rhythm

Everyone forms a circle. It is helpful to hold hands when first learning Movin' in Rhythm. When in the circle everyone starts moving clockwise (or counter clockwise) together. The goal is to be moving like a smooth wheel going in a circle. The leader can be *at the controls* to control the speed of the wheel or turn it on and off.

**Movin' Zoomin' -** Everyone forms a circle. Movin' Zoomin' combines Zoom and Movin' in Rhythm together. First have the group Movin' in Rhythm, then start Zoom. When these are successful, add EEK.

### In-Motion

Combines elements of mirroring and zoom that includes movement, sounds and moving in a circle. One person (initially the teacher) does a motion (movement and sound), then everyone repeats the modeled motion. Then another person in the circle does a motion followed by everyone repeating the modeled motion. The order could be determined from a caller who selects the next person or in order around the circle. In the beginning a suggested rule is to keep your feet on the ground and stay where you are standing.

### Pass the Rhythm

Everyone stands in a circle. One person begins by modeling a clap (the rhythm), then turns to a person next to them (we'll say to the left) and they must clap the rhythm together while looking at each other in the eyes. The person who just received the rhythm now turns to their left and does the same action with the person on their left. This continues until the rhythm returns to the person who began the rhythm. Other ideas include Pass the Face and Pass the Object.

### Pass the Motion (The Wave)

The group gathers into a circle and sits facing in. To begin, everyone extends their hands to the center of the circle with their palms up. The leader slowly curls their fingers, one by one, from the left to the right (or other direction). Then, the person to their right curls their fingers up in the same manner, and then the next person in the group, and then everyone continues around the circle. The motion should pass smoothly and fluidly. After the wave returns to the leader, you can pass another motion (perhaps uncurl the fingers) and add a sound. Then, you can pass any other motions, like standing up, raising your hands above your head, jumping, or whatever you think of. As leader, you are in control of the energy level.

# Building Community Exercises: Team Building
## *Whole Group Focus*

### Machine
The objective of the game is to create an abstract machine using people as parts. One person begins by making a simple repetative motion and sound. The leader selects another person to join the machine - this person adds another repetative motion and sound that works in rhythm with the first person. The leader continues to select people who continue making simple motions and sounds that work in rhythm with the machine. The leader (or a person in the group) is *at the controls* that can turn the machine off and on, or speed the machine up and slow it down. The leader can be specific on what the machine does or makes.

### Fruit Basket
The class sits in a circle on chairs. One person stands in the middle. The participants are equally divided between three fruits (e.g. apple, orange, and pineapples). When one fruit is called by the middle person (e.g. apples), all the apples change chairs including the middle person. The person 'out' becomes the next caller. If a *caller* says fruit basket all participants have to change.

### Frozen-in-Motion
The leader and participants sit on their chairs. Initially have the participants feel the floor, feel the chair, and feel the space they are in. This can be done with eyes open or closed. The participants are then directed to feel and replicate an emotion (e.g. boredom, surprise, mad, etc.). The leader (teacher or student) then says *freeze*. Everyone then freezes as a statue. The leader now says 'we are now in the museum of _____.' Everyone is then asked to focus on one person who remains a statue. Have the viewers focus on a particular part of the *statue person*. Elicit vocabulary to describe different body emotions of the statue person. The vocabulary could be recorded to use on a word wall. This is an excellent exercise leading to a tableau for recreating a part(s) of a story to stimulate and generate discussion.

### Group Rhythm
Form a circle and stand in a relaxed position. Everyone holds their arms out to the side in such a way that each person's index finger is touching the next person's index finger. In this way the whole group is connected fingertip to fingertip. The object of the exercise is for everyone to clap at the same time.

*Community exercises with students.*

*Community exercises with educators.*

# Building Community Exercises: Team Building

## Pantomime Games

Participants mirror each other in silence. This exercise has the participants focusing on each other to mirror the actions of the person modeling the movements. Initially, and periodically the teacher leads the mirroring activity to model effective movements. It is very important to regularly have students lead the mirroring. These exercises are very effective community builders that build collaboration and the ability to focus. They are excellent for transitions.

## Group Mirror

One person stands facing everyone in the class. They can stand anywhere in the class. It is important everyone has a clear view of the person leading the movement. All participants should stand clear of any objects or furniture. The order of modeling could be: moving arms; moving arms and hands; moving arms, hands, and fingers; moving arms, hands, fingers, and head; moving arms, hands, fingers, head, and torso; moving arms, hands, fingers, head, torso, and elements of the head (e.g. the eyes). The person who is the *mirror* leads the participants for approximately 30 seconds, then says freeze, with all the *reflections* now a stop motion of their movements. Then upon hearing continue they continue the reflection of the mirror. Group mirror is very effective to quickly start with the students participating from wherever they are in the class.

## Circle Mirror

The class, including the teacher stand in a circle allowing room for arm movement. The teacher can initially take the lead as the *mirror*. The person who is the *mirror* leads the participants for approximately 30 seconds (one student can be the timekeeper), then says freeze, with all the *reflections* now a stop motion of their movements. The mirror then selects another person to become the new *mirror*. The *reflections* now imitate the motions of the new *mirror*. The *reflections* now have a full view of the *mirror* allowing additional motions beyond those listed in Group Mirror including: moving up and down; moving legs and feet; and whole body movement. Circle mirror is excellent as a collaborative community builder with equal focus upon each other. It is very effective when students will be changing their location in the room. The circle could be formed at the location of the next classroom activity.

## Duet Mirror

Very similar to exercises and actions in Circle and Group Mirror. The students stand up and face a partner. Everyone, including the teacher (model), pair with someone in the classroom. They select a mirror person in each pair. They then start until they hear the word freeze in approximately thirty seconds (student timekeeper). The reflection now becomes the mirror. If there are an odd number of people in the class, there can be one group of three.

## Detective

Conducted similarly to Circle Mirror. One person who is chosen as the *detective* turns around (or leaves the room). A person is selected to be the *mirror* without the detective hearing or seeing the selection. The *detective* is invited back into the circle and/or room, where they will try to determine who the lead *mirror* is.

# Building Community Exercises: Team Building

In this section we will discuss implementing, practicing, changing it up, student centered and reflection with community building exercises.

## Implementing

While the idea of building community is a systems thinking approach of the whole classroom, an important process to building the community is with the exercises and games in this section (or other ones from many sources). Begin with one that you are comfortable with, and then brainstorm and sequence what you need to do, how you will introduce it, and then start doing the exercise.

## Practicing

Like everything we do, practice will bring success. I recommend that you practice the same exercise multiple days in a row. I highly recommend videotaping the community exercises in action to watch and learn from the experience.

## Changing It Up

If we did exactly the same thing the same way all the time, we would become bored. While we do want to practice a particular community exercise multiple times for developing understanding and expertise, it is important to change up what we are doing for interest and success. This can be adding an element to an exercise (e.g. with Zoom adding Eek) and/or combining different exercises together (e.g. Zoom and Moving in Rhythm) after introducing them separately.

## Student Centered

As you are regularly doing community building exercises, ask the students to take the lead with exercises you the teacher has introduced. The next step will have a student take the lead on a community exercise they know, have found in a book, have seen on the Internet or have invented on their own (or in collaboration with another person).

## Reflection

After doing community buildling exercises, ask the students what was the purpose of the exercise, what were the steps, and how would you modify and/or change it up. Additionally ask the students where they might use community building exercises in the the school and in other settings.

# Peer to Peer Coaching

The Peer to Peer Coaching model focuses on teachers regularly observing each other to learn, understand, and improve their pedagogy (teaching methods with the how of teaching). This model works best in small groups with a minimum of three - one teacher demonstrating a lesson while two other teachers observe. The observed lessons are generally in the 15-30 minute range to provide a focus on particular teaching methods. The model includes a briefing, lesson and debriefing. It is recommended to group teachers from different grade levels and subject areas so they are focused on the teaching methods and not only content.

This model is a multi-directional process: everyone has gifts and skills to share and learn from one another. This differentiated process allows everyone to progress at a rate consistent with their skills. The model is an ongoing process for both new and experienced teachers.

Ongoing Development: Teachers regularly participant with the Peer to Peer Coaching model throughout the school year. Weekly or every other week would be recommended.

This model is equally effective with administrators coaching administrators; facilitators coaching facilitators, staff coaching staff and so forth.

## Peer Coaching Process (Teachers Coaching Teachers)

**Briefing (deciding)**
The participants are led through a storyboard (flow map) of the lesson to be observed. The person doing the lesson might have requests for the observation, and the observers should have a focus to observe.

→

**Lesson (doing + observing)**
The observing teachers take notes, make sketches, and/or videotape the lesson.

→

**Debriefing (reflecting)**
The participating teachers including the person doing the lesson and all observers meet to discuss the lesson. The protocol is:
1. something positive observed
2. questions
3. taking away from the observation

*Hand drawings by Patrick Percy*

# Peer to Peer Coaching: Implementing

**Steps**

Implementing Peer to Peer Coaching school-wide develops the whole staff professionally while building community with the staff. Successful implementation should consider these steps:

- thoughtful, consistent, creative scheduling by the leadership
- beginning with several teacher teams of 3 to creating patterns of successful collaborations, develop models of excellence, and develop positive observation skills
- meeting once every week preferably on the same day and time for 30-40 minutes.
- adding several more teacher teams of 3
- adding all the teachers into groups of 3
- after each group has done 6 peer to peer coachings a change of teacher groupings to expand the learning and community building
- teachers sharing regularly at staff meetings their experiences, reflections, positive thoughts, and needs and questions with Peer to Peer Coaching
- inclduing support staff in the peer to peer coaching model

It is recommended to have teachers participate in a staff reflection with the whole staff using visual mapping to share successes and questions.

**Modeling**

Prior to starting the peer to peer coaching model, it is recommended modeling the process with the whole staff observing each of the three steps of briefing—lesson—debriefing. I would recommend doing this in a fishbowl setting with teachers doing the process with students.

**Tools**

It is recommended to use a notepad to take notes with all observations. The use of visual maps or a similar method of organizing observations is recommended on the notepad. Videotaping coaching deepens the coaching so the actual lesson can be reviewed and referenced at the debriefing. Without video you 'think you thought what you think you saw'. With video you can review, reflect and refine your observations. It is best to have the video on the students as they will tell the story. The video clip is kept by the teacher who did the lesson.

**Research**

Use the research on the following two pages in staff meetings and/or professional development with the whole staff (teachers and support staff):

1. Powerful Questions on a key word or phrase
2. Sort the questions (Tree Map)
3. Read the short abstract and/or introductions.
4. Add key observations in a Frame of Reference around the Tree Map.
5. How does this research connect with our student's success? What do we as teachers need to implement, practice and model to develop our student's critical thinking? Add this to the Frame of Reference in the Tree Map.

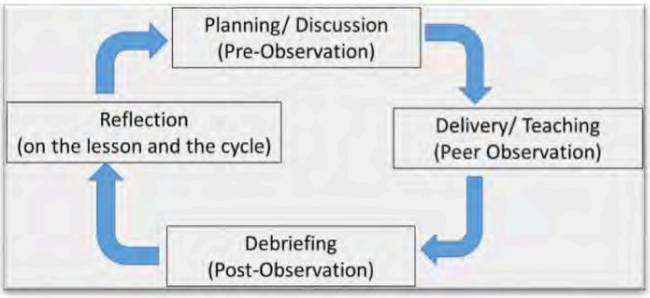
# Research on Peer to Peer Coaching in School Communities

## Peer Coaching for Improvement of Teaching and Learning

**Journal of Interdisciplinary Research in Education (JIRE) ISSN 2232-0180,** Vol. 6, Issue 1, 2016, pp. 64-70, Liew Wai Yee, Taylor's College Sri Hartamas, Malaysia.
**Keywords**: Peer Coaching, observation, self-reflection, professional development, mentoring

**Abstract**
This report reflects on the experience of conducting peer coaching for improvement of teaching practices and student learning. Peer coaching was first conducted by the Science Department offering Cambridge A-Level Programme on two Semester One classes. The observed lesson was targeted on engaging students through collaborative learning. Another experience on peer coaching was conducted by a group of teachers from different subjects and programmes, and targeted on learning by using formative assessment. The model attempted was the collegial peer coaching, and it included three main processes: pre-observation planning and discussion, two consecutive peer observations, and post-observation discussion. Peer coaching was found to be an impactful tool for professional development, because it offers teachers the opportunity for self-reflection, sharing of classroom experience, and mutual growth in teaching.

**Introduction**
Teachers nowadays face challenges, such as to improve student-centered teaching, to integrate technology into teaching and learning, and to implement higher-order thinking skills just to name a few. Traditionally, the improvement of teaching practices has been left to individual teachers to work out on their own. Lack of support, feedback or follow up has led to slow and insignificant progress. Peer coaching, which is also called instructional coaching, peer mentoring or lesson study, is a model of professional development that can be used to improve student learning by improving teaching. Peer coaching requires that the teachers who are involved to reflect on practice, share successful practices and suggestions, and/or learn from and with colleagues. It helps to engage not only the beginner teachers, but also the seniors, in learning collaboratively and professionally, to address common and mutual challenges in teaching.




**Complete Research Paper:**
**Peer Coaching for Improvement of Teaching and Learning**
*Journal of Interdisciplinary Research in Education*

# Research on Peer to Peer Coaching

## Peer Coaching That Works: The Power of Reflection and Feedback in Teacher Triad Teams

*By Robin Jarvis, Kathleen Dempsey, Grace Gutierrez, Dale Lewis, Kris Rouleau, and Bj Stone*


### Why Peer Coaching

In their work, Bruce Joyce and Beverly Showers (2002) focused on identifying what components a professional development (PD) program must have for it to impact student achievement. Looking at three potential outcomes of PD—knowledge, skill, and transfer—they concluded that transfer is required for the PD to truly impact student learning. In their efforts to determine what components of PD were essential to achieve this transfer of learning to the classroom, Joyce and Showers found that PD must include four components— study of theory, demonstration, practice, and peer coaching—for teachers to actually impact student achievement by implementing what they have learned in the classroom. To provide a more concrete representation of the impact of PD on participants, Joyce and Showers estimated the percentage of participants who would be able to demonstrate knowledge, skill, or transfer following their PD (Table 1). Their estimates suggest that with the addition of peer coaching, 95 of 100 teachers can be expected to apply the PD in their classrooms where it can impact student performance. If we were to include every component but peer coaching, the best we can expect is that 5 of those 100 participating teachers will transfer.

Table 1. Percent of participants achieving specific outcomes by PD component

| | Outcomes | | |
|---|---|---|---|
| Components | Knowledge | Skill | Transfer |
| Study of Theory | 10 | 5 | 0 |
| Demonstrations | 30 | 20 | 0 |
| Practice | 60 | 60 | 5 |
| Peer Coaching | 95 | 95 | 95 |

(Joyce & Showers, 2002, p. 78)

### The Power Of Three: Peer Coaching In Triad Teams

Drawing from their experiences leading the Action Improvement Zone (AIZ) initiative in the Northern Metropolitan Region (NMR) of Melbourne, Australia, our colleagues David Hopkins and Wayne Craig (2015) advocate for a peer observation and coaching model that uses a triad of teachers who collaborate regularly, learning and embracing the four phases of Joyce and Showers' PD model— theory, demonstration, practice, and coaching—to plan and monitor their professional learning work. (Hopkins and Craig also added a fifth phase: feedback.) Teachers worked in assigned or self- selected groups of three and took turns participating in three distinct roles: coach, coachee, and observer. The role of observer added perspective that might be lost if teachers worked solely in pairs. The observer provided descriptive feedback on the process for the coach and coachee, asking skillful questions that encouraged more reflective processing and helped each team member to learn and grow from the experience.

**Complete Research Paper:**
**Peer Coaching That Works**
*Journal of Interdisciplinary Research in Education*
*2017, McREL International.*

# Chapter 2: Questioning Methods

## Powerful Questions

## Collaborative Questions

## Socratic Seminar (Shared Inquiry)

# Questioning Methods - Overview

Use of questions develops meaning with problem solving and/or visioning. It is important to ask interpretive questions that develop understanding. Interpretive questions are effective with well planned formal discussions and in spontaneous informal settings of discsussion to develop ideas, communication, understanding and problem solving. Most importantly the interpretive questions are effective when they are well organized, open to facilitating interest and discussion, and lead to further understanding of the topic(s) and idea(s) being discussed.

## Questioning Methods

- **Powerful Questions -** is a question technique is used to build comprehension, inferential thinking, listening skills, understanding, and interest.
- **Collaborative Questions -** is a collaborative learning method with questions.
- **Socratic Method** - is is a form of cooperative argumentative dialogue between individuals, based on asking and answering questions to stimulate critical thinking and to draw out ideas and underlying presumptions. The Socratic Method is a series of questions formulated as tests of logic and fact intended to help a person or group discover their beliefs and understanding about a particular topic.
    - **Discussing Things That Matter - Philosophy for Children** - https://p4c.com/
    - **Shared Inquiry - Great Books Foundation** - https://www.greatbooks.org/

## Types of Questions

- **Factual** - A factual question has only one correct answer.
- **Evaluative** - An evaluative question asks the participants to decide if s/he agree with the ideas or point of view (frame of reference). The answer to an evaluative question depends on the person's prior knowledge, experience, and opinions.
- **Interpretive** - An interpretive question has more than one answer that can be supported with evidence from background knowledge and research. Interpretive questions keep discussions going requiring the participants to refer to experiences, knowledge, text evidence and research.

## The Socratic Method for Shared Inquiry is a Philosophy for Children

Shared Inquiry is a method of teaching and learning that enables people of all ages to explore the ideas, meaning, and information found in everything they read. It centers on interpretive questions that have more than one plausible answer and can lead to engaging and insightful conversations about the text. It is recommended learning more about Shared Inquiry at The Great Books Foundation website and the concept of students being philosophical at the Philosophy for Children website.

# Powerful Questions

The Powerful Questions technique is used to build comprehension, inferential thinking, listening skills, understanding, and interest. Either an object or image are used as the focal point for questions. After the object or image have been revealed, the students initially observe the object or image, then share questions from their observations. This technique develops inquiry skills while enhancing observation abilities. It is important that no questions are answered during the exercise. Ultimately quality questions frame deeper understanding. The questions can be written down and then sorted into categories by the students to use with a shared inquiry discussion.

*Object or Photographic Image*

Either an object or an image work well for this exercise. When presenting an object refer to it as a common object (or similar generic term). This stimulates enhanced observation skills, especially when an object might be several different things. With an image or photograph, it is best to choose one that has some unknown to it (e.g. a half built igloo - is it being built or taken apart?). It is an excellent tool to use an image from a text or book that is being studied as an introduction. Newspapers are also an excellent source of images which becomes an excellent anticipatory set prior to reading the article.

*In Action*

*Order of Technique*

State you will be shown a common object (or image) which we'll ask questions about. The object and/or photo should connect with what is being studied to provide interest and curiosity. Initially they will be shown the object (or image) and quietly observe it. The students could closely gathered around the object, the teacher could be walking around the room, or each small group could have one of the objects or images. The students are informed we will only ask questions—they then start presenting their questions. It is best the teacher doesn't repeat the questions, instead having the students repeat their own questions so the focus is on them while they hone their presentation skills. They will be able to see the object or image throughout the time they are sharing questions.

If the object or image is something they are studying, the questions might be recorded on poster paper. In higher grades two students would write the questions and in lower grades the teacher would write the questions. The person(s) who asked each question might also be noted next to their question to honor them when using the questions during a later study and/or shared inquiry.

The teacher never provides answers and only occasionally asks a question themselves. They might ask a question to offer a new direction, different frame of reference or a deeper extension. e.g. about the perspective of who took the photograph or who invented/designed an object. Reread all the presented questions to that point several times during Powerful Questions. This recap honors the presented questions while stimulating ideas for deeper inquiry.

# Collaborative Questions

To start *Collaborative Questions* the two participants must initially decide on a topic to question. One person starts with an open ended question, then the other person responds with a related open ended question. This continues back and forth with the two participants. The process can start from an object, a topic, or a photograph. An example is an object in the room such as a light bulb:

- *Questioner A: How does a light bulb work?*
- *Questioner B: Who designed the current light bulb?*
- *Questioner A: Who invented the light bulb?*
- *Questioner B: Why would someone invent the light bulb?*
- *Questioner A: What inspired the inventor to think of creating a light bulb?*
- *Questioner B: How can we improve the light bulb?*

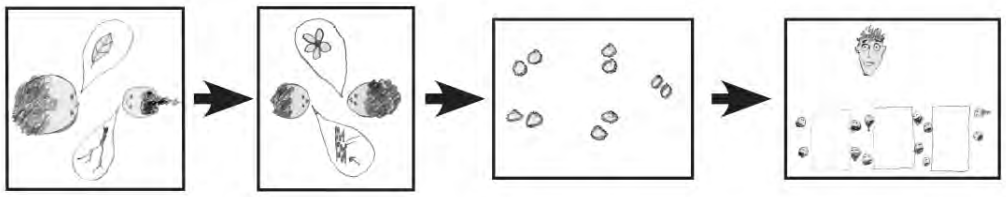
Using a Photograph

- *Questioner A: Is the photo actual size?*
- *Questioner B: Where does it live?*
- *Questioner A: How long does it live?*
- *Questioner B: What does it eat?*
- *Questioner A: Does it sleep?*

Process of Teacher Modeling with Students

- *Facilitator models with a student;*
- *two students model;*
- *all students paired up to pair / share;*
- *whole group shares. After one student shares, the student picks another student.*

**Collaborative Questioning**



teacher models with a student | two students model | all students in pairs | sharing with the whole group

# Socratic Seminar aka Shared Inquiry

## The Socratic Seminar aka Shared Inquiry in Action

When exploring any type of text with a Socratic Seminar (fiction, non-fiction, poetry) it is important to ask interpretive questions that develop understanding and further lines of questions for depth. Interpretive questions are effective both with well planned discussions and in spontaneous situations. Interpretive questions stimulate comprehension, oral language, and written language.

### Types of Questions

- **Factual** - A factual question has only one correct answer.
- **Interpretive** - An interpretive question has more than one answer that can be supported with evidence from the text. Interpretive questions keep discussions going and require the reader to refer back to the text.
- **Evaluative** - An evaluative question asks the reader to decide if s/he agree with the writer's ideas or point of view. The answer to an evaluative question depends on the reader's prior knowledge, experience, and opinions.

### Writing Interpretive Questions

Interpretive questions are open-ended, text-based questions having multiple responses that are based on evidence from the text. Unlike a factual question that's looking for a specific fact, a closed end response, an interpretive question is open-ended that usually requires a more in-depth response that is supported with evidence from the text.

- **Questions to Interpret the Text**: Identify aspects of the text that are open to multiple interpretations. For this question, you'll want to focus on the ideas, characters or plot in the text as opposed to the author's methods.
- **Questions to Analyze the Author's Methods**: Identify anything unique, interesting, or unconventional about the author's writing style, use of language, grammar, word choice, structure, etc. Another consideration in designing a question to analyze the author's methods is to think about students' own writing. What about this text might be helpful to students' own writing? Is there something this published author does that students might try in their own writing?

### Testing the Questions

- **There should be genuine doubt about the answer(s) to the question**. If a question is open to different possible answers, students will be more willing to share their thoughts.
- **You should have genuine interest in the question**. Students will 'read' your interest (or lack of) in the question and story.
- **The question should stimulate discussion**. The question should create an interest in revisiting the text for evidence.
- **The question should be clear**. The participants should easily understand the question.
- **The question should be specific**. The question should fit the story and not generic to any story.
- **Use the text**. When you are constructing questions, use key words and phrase directly from the text.

# Socratic Seminar aka Shared Inquiry

## The Socratic Seminar in Action

### Leading a Discussion

Here are the basic ground rules for leading a discussion:

- Participants must have read or heard (read aloud) the text.
- Discussion is focused on the selection everyone has read or heard.
- Opinions should be supported with evidence from the text.
- Leaders only ask questions – they do not answer them – as the facilitator.

For a discussion based on interpretive questions to be successful, student interest needs to be encouraged and valued.

### Preparing Questions

To create effective questions and questioning techniques it is very important to develop and test the questions prior to discussing the story with the class. To facilitate quality questions it is beneficial to take notes when initially reading the text. Writing interpretive questions provides a template of the types of notes to help develop quality questions. After writing questions from your notes, have another person read the text and try the questions out on them. This will provide an opportunity to test the testing the question criteria.

Interpretive questions are an important part of all discussions. It is important to learn how to use the text vocabulary within the questions. An example is the book, *Where the Wild Things Are*. If you are asking about the Wild Things then phrase the question 'Why did the Wild Things... ?', not 'Why did the monsters... ?' as using monsters is your view, and open to interpretation with evidence from the text.

### Students Create the Questions

To create effective questions for a shared discussion (Socratic Seminar), and create buy-in from the students, have the students develop the questions. One method of doing this is:

- Before reading based on an image from the book have the students do The Questioning for Inquiry Collaboratively to develop ideas for questions. This can be repeated after reading each chapter or a portion of the book.
- The students write questions they have down on small individual papers (e.g. the size of a sticky note) while in small groups of 3-5 students. They should write 3-6 questions each.
- The students in each small group then sort the questions to categorize them by similarities. See the section in this guide on Inductive Reasoning and Inductive Mapping.
- The students come up with a top level question for each category. They refine the top level questions by using phrases from the text.
- The top level questions are used by the students for the Socratic Seminar (Shared Inquriy).

# Research on Questioning Methods and Inquiry

*Read the following articles on research on inquiry and problem based learning.*

**Guiding Questions**

- What are your questions after reading this research?
- How does this research apply to your school?
- How would you map out a plan to implement practical tools and practices to support the quality of the school's social capital?

**Research in Action**

1. Use Collaborative Questioning (see in this guide) to respond to *What are your questions from reading this research?* Then in small collaborative groups write several questions from the Collaborative Questioning exercise with each question on a separate piece of paper to sort (see the categorization map and section on inductive sorting). Sort the questions into categories. Label a top question for each category.
2. Use a visual tool to map: How does this research apply to your school? Possible maps include brainstorming, cause and effect, comparing or a map that supports your thinking.
3. What are the steps and parts of the steps to implement a plan? Use a sequence map (Flow Map) to create a timeline.

## Socratic Circles in Professional Development Sessions: Negotiating Peripheral Participation and Membership in Building a Community of Practice

*Hayriye Kayi-Aydar & Christian Z. Goering ORCID Icon*

*Pages 154-171 | Received 01 Dec 2016, Accepted 20 Nov 2018, Published online: 11 Jan 2019*

**Abstract**

Effective professional development occurs in learning communities where teachers co-construct knowledge with peers about teaching and learning by engaging in meaningful activities. However, only a few studies have examined the complex nature of discourse, participation, and learning in professional development contexts. Grounded in the notion of "communities of practice," this study investigated how middle and high school teachers who participated in a series of professional development activities on implementing Socratic circles in Grades 7–12 classrooms negotiated participation and membership in building a community of practice in and through Socratic circles. Twenty-three teachers were audio- and video-recorded when they participated in 10 discussions as part of a semester-long experience. The discourse analysis demonstrates how the participants negotiated different forms of participation in Socratic circles, and implications for teacher educators and teachers are offered.

*Keywords: communities of practice, professional development, socratic circles, teacher identity*

# Research on Questioning Methods and Inquiry

## Problem-Based Teacher-Mentor Education: Fostering Literacy Acquisition in Multicultural Classrooms

*Hartman, P. , Renguette, C. , & Seig, M. (2018). Problem-Based Teacher-Mentor Education: Fostering Literacy Acquisition in Multicultural Classrooms. Interdisciplinary Journal of Problem-Based Learning, 12(1). Available at: https://doi.org/10.7771/1541-5015.1659*

**Abstract**

We designed a professional development (PD) teacher-mentor program that used problem-based learning (PBL) to accomplish two goals. First, teachers explored how PBL could be used effectively in their classrooms to change the way they think about teaching to include literacy development in content areas. Second, PBL was the basis for PD training to help them improve their own knowledge of PBL, become mentors to other teachers, and implement PBL in their schools across content areas.

Educators in the United States are challenged to teach linguistically and culturally diverse (LCD) students with differing literacy levels. The demographics of U.S. classrooms require a rigorous attempt to engage LCD students through collaborative, active learning opportunities (McGroarty, 1998; U.S. Department of Education, 2015). Research shows that literacy learning for all students improves in classroom settings that take a cooperative, student-centered approach (McGroarty, 1988, 1989; NCSS, 1991; Shumway, Saunders, Stewardson, & Reeve, 2001). PBL provides opportunities for students to engage in active learning and allows students with multiple learning styles to negotiate contextualized meaning through a variety of collaborative tasks. PBL has also been shown to be an effective method for teaching learners to be self-directed problemsolvers. However, in the absence of PD and ongoing support, teachers are often resistant to the implementation of PBL.

In our program, we used PBL to help teachers learn more about literacy and PBL while providing opportunities for PD and support. As a result, the teacher reflections, discussions, presentations, and self-evaluations demonstrated how, by using PBL in their classrooms while immersing themselves in evidence-based content, they observed enhanced student collaboration. Teachers felt that they were better able to foster a learning environment in their classrooms that would allow students to develop literacy skills in a content-rich context both because of the incorporation of PBL and because of the support they provided for each other. This idea can be easily adapted to foster teacher development and mentoring programs in other fields.

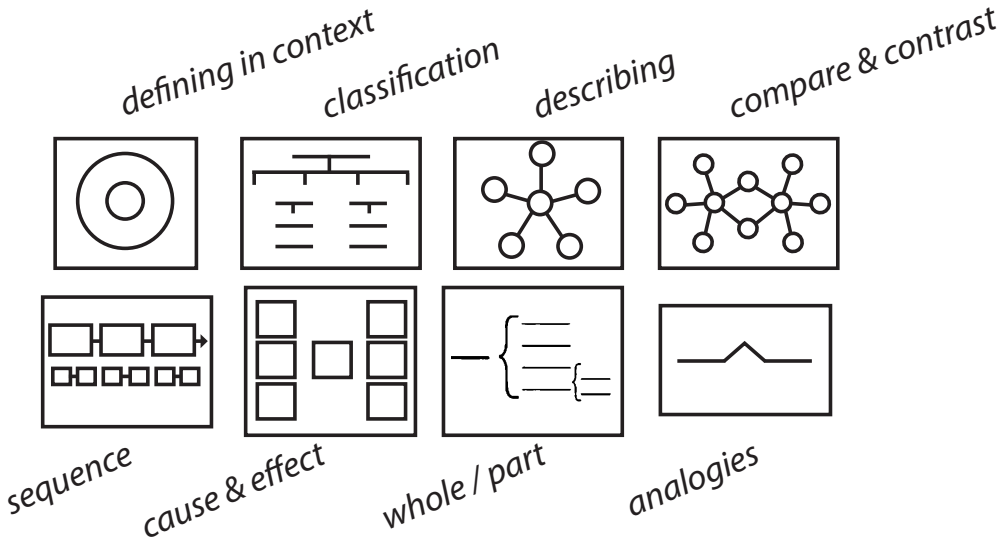
*Keywords: problem-based learning, literacy, linguistically, culturally diverse, student-centered*

# Chapter 3: Visual Tools

## Visual Tools and Mapping

## Frame of Reference

## Deductively and Inductively

# Types of Visual Tools and Mapping

Visual mapping is a means of graphically representing ideas, conceptual relationships and progression paths. They range from the simple spider diagram, flow chart or time line – to more sophisticated models such as Buzan's Mindmap, Edward de Bono's Flowscape, Joseph D. Novak & Alberto J. Cañas Concept Maps, and David Hyerle's Thinking Maps which can be used to explore complex relationships, perspectives and perceptions. Visual representation are thought to aid understanding and memory because it better fits with the brains method of processing information than standard note-taking, as the brain stores information in patterns and associations, not linearly.

Visual tools also have the capacity to be used to stimulate meta-thinking skills. Tony Buzan, who pioneered the use of mind maps back in the 1970s, argues that mind maps encourage creativity. The process of graphically organising information on the same page stimulates the mind to make associations, and it is through making such associations that the creation of new ideas occur.

### Brainstorming

Brainstorming is a diagram used to visually organize ideas on one concept. An example is mindmapping, which is hierarchical and shows relationships among pieces of the whole. It is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words and parts of words are added. Major ideas are connected directly to the central concept, and ideas branch out from those.

### Concept Maps and Diagrams

A concept map is a conceptual diagram that depicts suggested relationships between concepts. It is a graphical tool that instructional designers, engineers, technical writers, and others use to organize and structure knowledge. A concept map typically represents ideas and information as boxes or circles or similar shapes, which it connects with labeled arrows in a downward-branching hierarchical structure. The relationship between concepts can be articulated in linking phrases such as causes, requires, contributes to, categories, comparing,or relationships.

### Graphic Organizers

A graphic organizer is a pedagogical tool that uses visual symbols to express knowledge, concepts, thoughts, or ideas, and the relationships between them. The main purpose of a graphic organizer is to provide a visual aid to facilitate learning and instruction. Graphic organizers are usually selected by the facilitator to use for a specific concept understanding.

### Visual Language

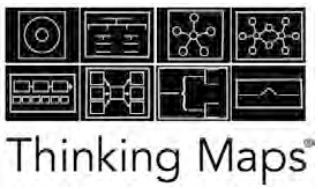
A visual language connects the ideal of mindmapping, graphic organizers and concept mapping to have a language that represents cognitive processes. Each visual map represents a cognitive process (e.g. comparing, categorizing) to organize our ideas.

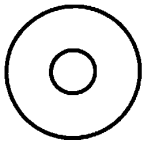
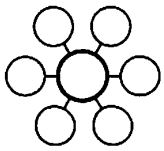
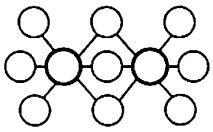
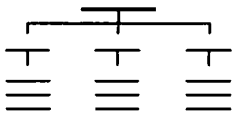
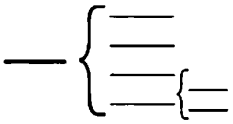
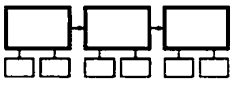
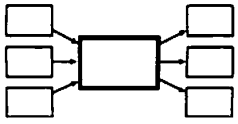
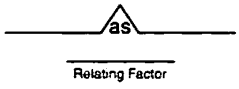
### Frame of Reference

Frame of Reference is a person's experiences that frames their beliefs and decisions.

# Thinking Maps® (Visual Tools)

Thinking Maps are consistent visual patterns linked directly to eight specific thought processes as shown below. By visualizing our thinking, we create concrete images of abstract thoughts to reach higher levels of critical and creative thinking individually and collaboratively. Thinking Maps establish a consistent language for thinking and problem solving. The goal is to have the students work independently choosing the cognitive process of a Thinking Maps® that best supports their thinking.



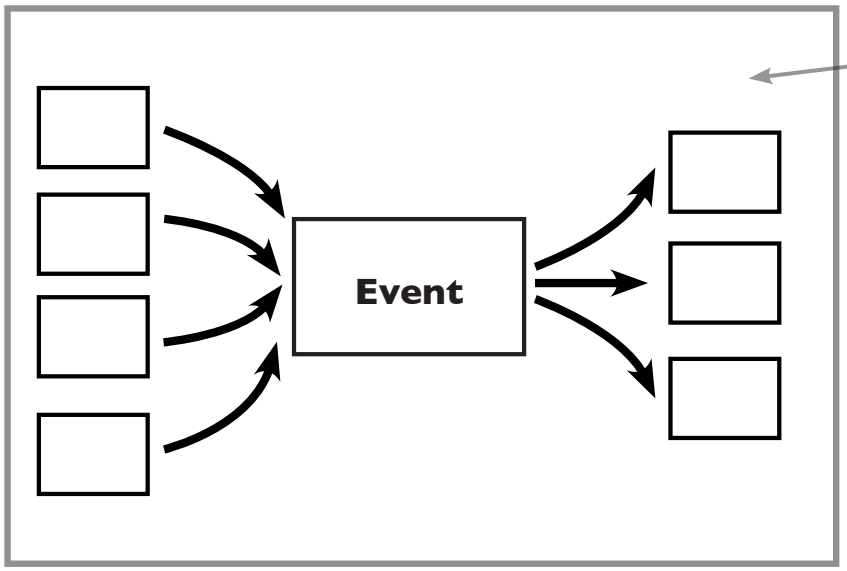

| Guiding Questions | Thinking Processes | Thinking Maps as Visual Patterns | |
|---|---|---|---|
| How are we defining this topic? What is the context? Brainstorming ideas on the topic. | **DEFINING IN CONTEXT** | **Circle Map** |  |
| Let's describe the topic. Using adjectives and adjective phrases, what are the sensory, logical and emotional attributes present? | **DESCRIBING QUALITIES** | **Bubble Map** |  |
| Let's compare our ideas. Where are the similarities? and differences? How does the present situation compare to our identified goal? | **COMPARING and CONTRASTING** | **Double Bubble Map** |  |
| How could we classify these ideas into groups or categories? What are the main ideas, supporting ideas and details this information? | **CLASSIFYING** | **Tree Map** |  |
| Are there any physical, component parts and subparts that we need to analyze? | **PART TO WHOLE** | **Brace Map** |  |
| What do we think happened? What is the sequence of events? Let's prioritize our solutions and then create a sequential plan of action. | **SEQUENCING** | **Flow Map** |  |
| What are the short and longterm causes and effects of this event? What are the feedbacks in the system? Given our solution, let's predict what will happen over time. | **CAUSE and EFFECT** | **Multi-Flow Map** |  |
| How is this situation related to other experiences we know? What analogy is guiding our thinking? | **SEEING ANALOGIES** | **Bridge Map** |   |

# Frame of Reference With Visual Tools and Mapping

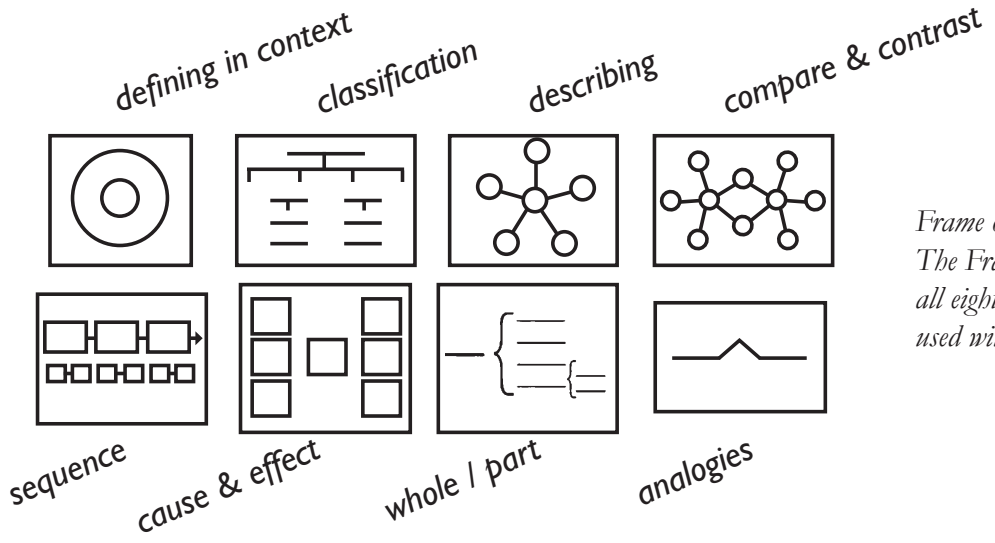
A frame of reference can be used with any map. It is a meta-cognitive frame asking participants to think about their thinking. They will be asked to step back from the map they created to think about what influenced their thinking.

The following questions could be asked to know the frame.

- How do you know what you know about the topic?
- Did your information come from a specific source?
- Is this information being influenced by a specific point of view?
- Who could use this information?
- Why is this information important?




*Reflective Frame of Reference:*
*What are sources of information you can access to assist you?*
*What is each person's role in the organization?*




*Frame of Reference:*
*The Frame of Reference is used with all eight Thinking Maps and can be used with any visual tool.*

# Depth and Complexity with Frame of Reference

The Depth and Complexity model provides depth of thinking as a critical thinker, as a problem solver and considerations for all aspects of multiple perspectives with collaborations and understanding.

**Note Details**
elaborate; identify attributes; note the parts; important factors


**Identify The Rules**
state the explicit or implicit factors that affect an area of study; the structure; the order; the hierarchy; the elements that set the standards

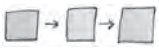
**Observing Patterns**
identify reoccurring elements and events; determine the order of events; predict what comes next

**Recognizing Trends**
note factors that cause events to occur (social, political, economic, geographic); identify patterns of change over time

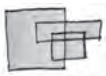
**Identify Ethical Considerations**
determine elements that reflect bias, prejudice, discrimination; state observations and arguments in terms of ethics

**Questions for Inquiry**
use questions to identify unclear ideas or missing information; discuss areas yet to be explored or proven; and note conclusions that need further evidence or support

**What is the Generalization, Principle, Theory or Big Idea**
identify a rule or general statement that summarizes information or draws conclusion based on evidence drawn from a collection of facts or ideas

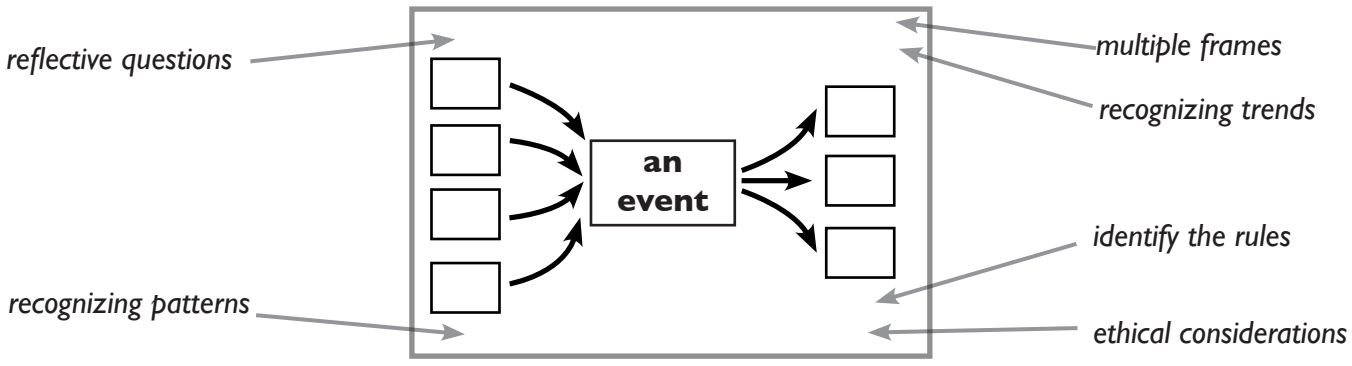


**Relationships Over Time**
describe relationships between past, present and future; relationships within a time period; how or why things changed or remained the same

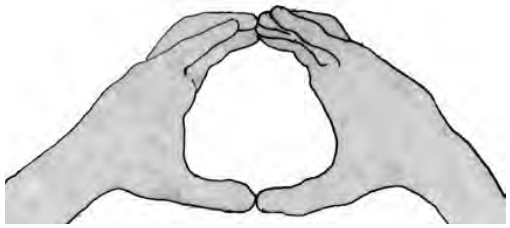


**Multiple Frames of Reference (Perspectives)**
discuss multiple perspectives related to area of study; explore different viewpoints; reflect on diversity within a society

**Interdisciplinary Connections**
relate and integrate the area of study to include the methodology of other disciplines



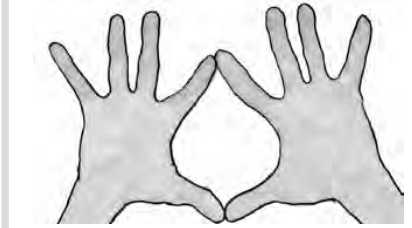
*circle map*

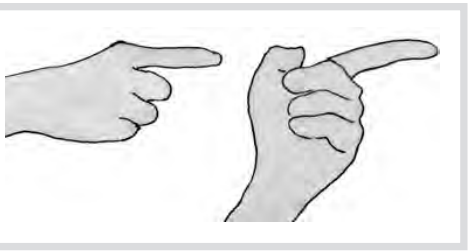


*tree map*

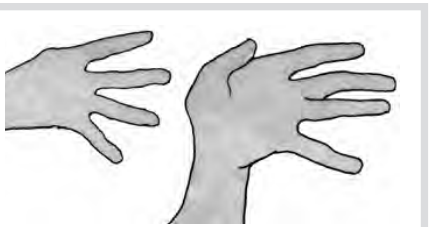
*bubble map*

*double bubble map*

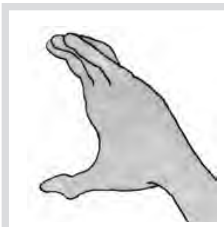




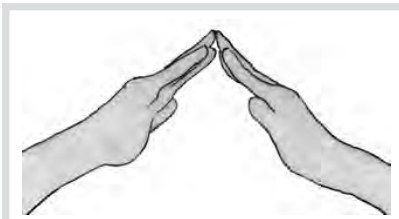
*flow map*



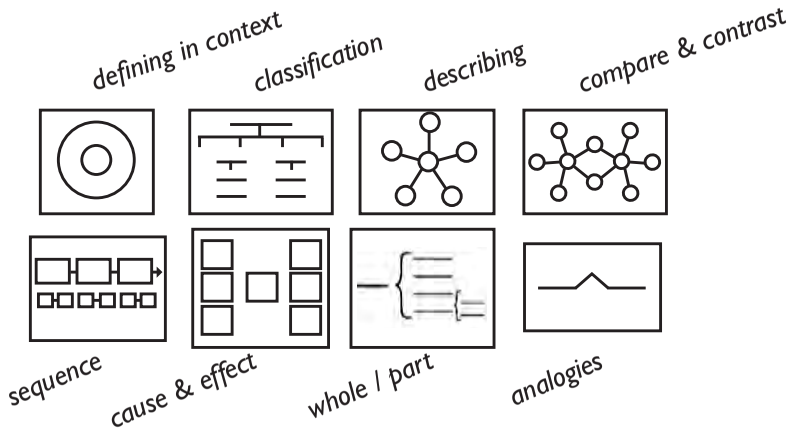
*multi-flow map*



*brace map*



*bridge map*
*relating factor_____*




*Hand drawings by Patrick Percy*

# Visual Mapping
# Inductive, Deductive and Abductive Reasoning

Inductive reasoning moves from specific instances into a generalized conclusion (bottom up), while deductive reasoning moves from generalized principles that are known to be true to a true to provide direction with specific instances (top down). Abductive reasoning usually starts with an incomplete set of observations and proceeds to the likeliest possible explanation for the group of observations. We will focus on inductive and deductive reasoning.

Lets keep it simple with an example. We will use a Tree Map for Classification to model. This map can be created 'top down' or 'bottom up':

- Top down requires starting with the top categories to sort the things and/or ideas being categorized.
- Bottom up starts with the things and/or ideas being categorized being sorted into similar categories, then determining the top categories.

Both have a purpose:

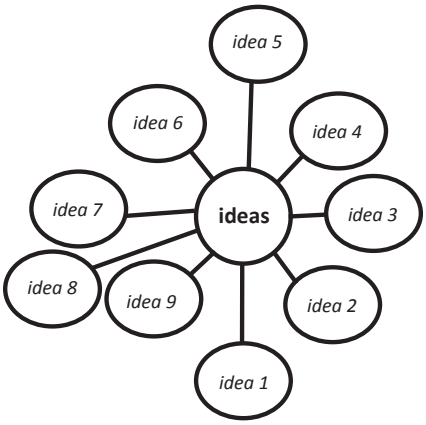
- Doing it from 'bottom up' requires thinking what are the connections and patterns are of the things and/or ideas being categorized, and from that determining what the top categories are. In small groups this increases the level of discussion in regards to synthesizing information and comprehending connections.
- Doing it from the 'top down' begins with and follows a predetermined design and order to sort the different things and/or ideas to be categorized. This assumes everyone has the same frame for categorizing.

While the different processes are modeled on the opposite page for a Sorting for Classifications Map, this process is applicable for ALL visual maps, and all explorations of things and ideas.

# Inductive Mapping

**Brainstorming the Ideas** → **Sorting by Category** → **Category Headings**

different small groups can sort differently




| | |
|---|---|
| idea 2 | idea 1 |
| idea 3 | idea 4 |
| idea 5 | idea 6 |
| idea 7 | idea 8 |
| | idea 9 |

| | |
|---|---|
| idea 2 | idea 1 |
| idea 4 | idea 3 |
| idea 6 | idea 5 |
| idea 8 | idea 7 |
| | idea 9 |

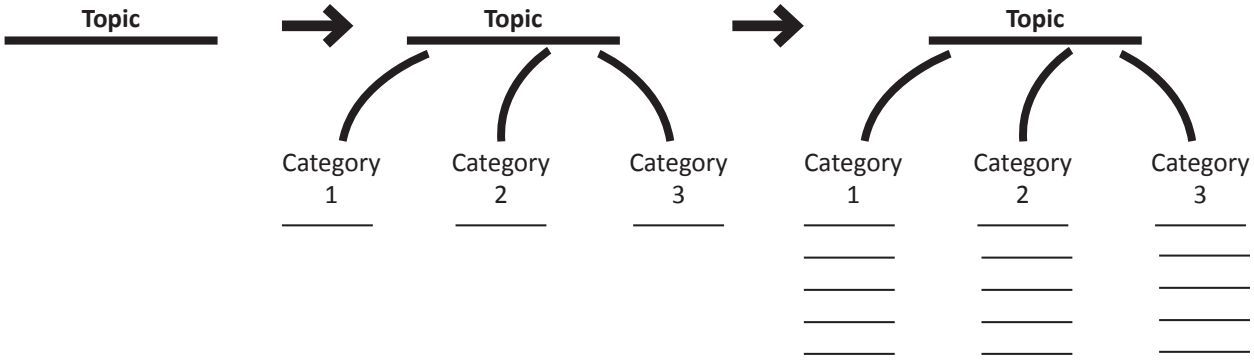
**single digit integers**

| even | odd |
|---|---|
| idea 2 | idea 1 |
| idea 4 | idea 3 |
| idea 6 | idea 5 |
| idea 8 | idea 7 |
| | idea 9 |

**single digit integers**

| prime | not prime |
|---|---|
| idea 1 | idea 2 |
| idea 3 | idea 4 |
| idea 5 | idea 6 |
| idea 7 | idea 8 |
| | idea 9 |

# Deductive Mapping



# Five Levels of Thinking Maps® Implementation

Thinking Maps®

| | 1<br>Introducing the Knowledge Base | 2<br>Teaching the Skills and Maps | 3<br>Horizontal Transfer Across Disciplines | 4<br>Vertical Integration | 5<br>Executive Control and Assessment |
|---|---|---|---|---|---|
| **STUDENT** | • Is aware of the impending implementation | • Correctly applies and constructs all 8 maps with support<br>• Recognizes maps as teacher applies them in new situations<br>• Identifies appropriate TM in response to prompt or question | • Uses thinking process vocabulary<br>• Accurate and independent selection of TM for communicating thoughts and ideas in all subject areas<br>• Applies multiple maps to analyze and comprehend information for learning | • Uses TM in collaborative group work to expand, revise, and synthesize ideas<br>• Collaborative problem-solving<br>• Applies TM to homework, projects, etc., for a variety of purposes and through a variety of technologies, including TM software | • Fluid, independent use of language of TM across disciplines<br>• Uses TM for metacognition, self-reflection, and assessment<br>• Self-selected artifacts for student portfolio of Thinking Maps<br>• Novel applications beyond academic areas |
| **TEACHER** | • Has attended Day 1 TM training<br>• Established a plan for systematically introducing TM<br>• Has met with colleagues (grade level, content area) to review plans for implementation<br>• Discussed with students the plan for implementation | • Explicitly introduces and reinforces all 8 maps<br>• Models and applies multiple maps to demonstrate and introduce content and concepts | • Uses TM to guide questioning and responses<br>• Encourages and models thinking process vocabulary for transfer across disciplines<br>• Explicitly scaffolds map(s) for improvement of students' thinking abilities | • Uses TM in collaborative work for instruction and assessment<br>• Collaborative problem-solving and curriculum planning<br>• Uses TM in and for curriculum planning, cooperative learning, and assessment through a variety of technologies, including TM software<br>• Embeds Thinking Maps in other instructional strategies, structures, and initiatives | • Fluid use of map(s) in instruction and assessment<br>• Uses TM for metacognition, self-reflection, and assessment<br>• Self-selected collection and documentation of Thinking Maps integration<br>• Novel application to instructional opportunities beyond academic areas |
| **ADMINISTRATOR** | • Has a clearly developed plan to support TM implementation<br>• Uses TM for basic agendas or to display data such as agendas, roles (if leadership training has preceded TM implementation) | • Uses TM to plan and facilitate small and whole group meetings<br>• Models multiple maps to introduce and generate information about topics or issues | • Uses TM for coaching and supervision<br>• Uses TM for long-term planning and school improvement<br>• Encourages and models thinking process vocabulary for transfer across the learning organization | • Uses TM in collaborative work for instruction and assessment<br>• Collaborative problem-solving and curriculum planning<br>• Uses TM in and for curriculum planning, cooperative learning, and assessment through a variety of technologies, including TM software<br>• Embeds Thinking Maps in other instructional strategies, structures, and initiatives | • Fluid use of maps in collaborative problem-solving, coaching, and supervision, etc.<br>• Uses TM for metacognition, self-reflection and assessment<br>• School-wide documentation of applications across grade levels and disciplines<br>• Novel application to administrative duties |
| **SCHOOL** | • Leadership Team, including Trained Trainers, established to guide implementation<br>• All resources and TM software, if acquired, are distributed to faculty<br>• Central area established to share/display TM work | • Displays evidence of student, teacher, and administrator applications<br>• Parents are made aware of the implementation of the maps and opportunities are provided for them to become oriented to their use | • Sharing, discussing, and collecting map applications and media across all grade levels and positions to promote the school-wide common language<br>• Uses TM for school-wide data analysis and action planning | • Uses TM in grade level department, parent, and volunteer meetings for collaborative problem-solving<br>• Integrates TM as a tool within other communication frameworks through a variety of technologies, including TM software | • Fluid use of maps for communication between all members of learning community, parents<br>• TM technology used to facilitate higher order thinking across school<br>• School-wide assessment of implementation indicating patterns of use, growth and next steps<br>• Novel applications outside of school building (in the wider community) |

# Visual Mapping • Frame of Reference

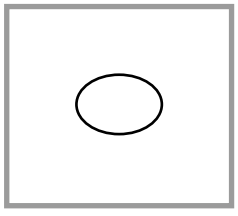
Perspective, Point of View

The Frame of Reference

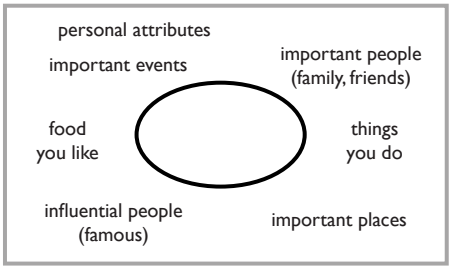
Thinking Maps®

## My Story: Frame of Reference

**1** Use the space above and draw a circle and frame. This process can also be done in sand with a stick.

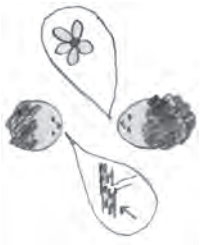


**2** Write and/or draw things that describe things about your life. Your frame of reference including important people, events, places, favorite movies-music-books, and things important to you (values).




**3** Students pair with another student to share their personal frames.

in pairs

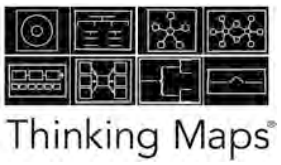


whole class

# Circle Map

*Defining in Context • Brainstorming*

The Circle Map is used for brainstorming ideas and thoughts about a topic or a concept.




## My Story: Circle Map

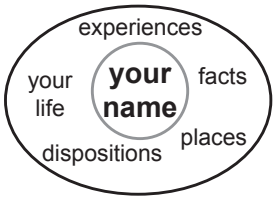
**1** *Write your name and draw a circle around your name.*

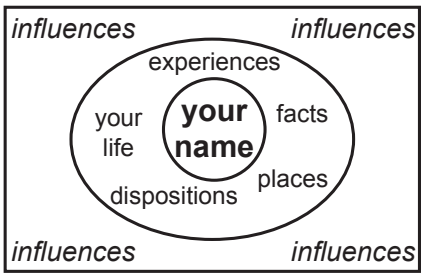
**2** *Write and/or draw things about yourself around the circle with your name.*

**3** *Draw a circle around your information.*

**4** *Draw a frame of reference around your map. Write influential people, places and events of your life in the frame.*





# Bridge Map

*Classification*

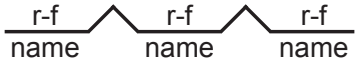
The Bridge Map is used for identifying similarities between relationships and creating analogies.

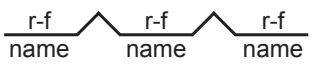

## My Story: Bridge Map

**1** *Write or draw a picture of yourself on the bottom. Do the same for friends at your table. Add a key attribute or descriptive for each person.*

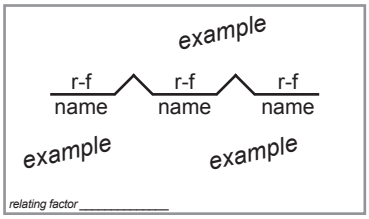
**2** *Write what the 'relating factor' (r-f) is for all the friends in regards to their common attributes.*

**3** *Draw a frame of reference around your map. Write or draw examples for each person's relating factor attributes.*




*relating factor* _____



# Visual Mapping Collaboratively

## Why?

Visual mapping provides a way to organize, explore and discover each person's thinking by using different visual maps representing how we think cognitively. The frame provides a tool to consider each person's background and thinking to building upon organizing and understanding each other. Doing visual maps together provides a collaborative learning method to:

- learn collaborating together
- learn another person's viewpoint (frame of reference)
- learn how to process different ways from each other

The visual maps are a tool for thinking that supports organizing thoughts to write succinctly, thoughtfully and successfully.

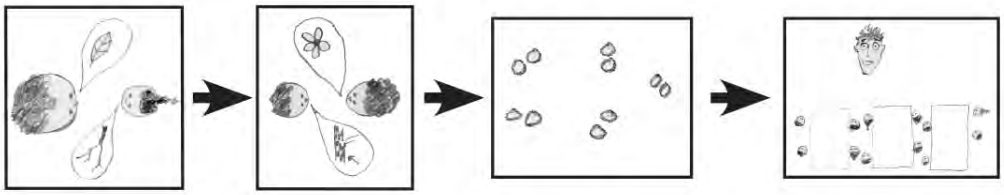
## How to Model and Implement

The teacher has an opportunity when using visual maps to:

- model how to think with the maps
- model how to collaborate with another person
- model what to do when you don't know what to do
- share how one thinks aloud while working together

Review the Think-Pair-Share methods in Collaborative Learning to implement the visual mapping in a collaborative manner.

**Modeling Visual Maps in Pairs**



teacher models with a student | two students model | all students in pairs | sharing with the whole group

## Assessing

The Visual Maps are a tool that can assess how a student is thinking–making connections and organizing thinking for writing and presenting. If a student keeps their mapping in a notebook, we can see their progress with use of visual mapping over time.

The goal is the students knowing all eight Visual Maps and the students becoming autonomous in choosing and using the map that best supports their needs.

# Research and Studies on Visual Tools and Mapping

## It is What We Pattern in the Brain

*David Hyerle, Visual Tools for Transforming Information Into Knowledge, Corwin Press, 2009.*

The moment I knew that the visual tools described in this book were deeper than the facade of the boxes, ovals, and arrows that we have seen for years was during a return visit to a school in Mission, Texas, in the early 1990s. I had been leading the implementation in this school over time, using a language of visual tools that I developed as a foundation for facilitating thinking skills, and for directly improving teachers' instruction and students' performance. During a previous workshop at the school, a participant had asked a question that stopped me in my tracks. At first the question seemed to indicate a resistance to change that we have all felt at one time or another, but then the question turned to a deeper level: "These visual tools may work for most students, but not for my students." I asked, "Why not?" She hesitated and then spoke softly, "They are blind. How would you use visual tools with blind students?" As quiet settled across the crowd (and "wait time" proved to be no great strategy at that moment), all I could do was respond with a promise to return with the question in mind.

When I did return a month later the teacher who had asked the question handed me the answer: a videotape and several pale yellow, bumpy pages. And then I knew: her students were using a Braille machine to generate visual tools on this special paper. We popped the video into the machine, and the whole faculty watched with a focused fascination rarely found in a workshop setting. One of her students, particularly taken by "visual" tools, had created several Braille maps for generating context information about a writing topic using a Circle Map and then prioritizing the ideas into a Flow Map for sequencing. On the video, this boy led his seeing peers in a discussion about the use of the maps and a reading of his description about a visit to a beach as his hands moved over the pages, sensing the spatial display of the bumps. The product was a beautifully descriptive piece of writing. The teacher was delighted with the outcome, and the student was improving his writing and thinking abilities. Of course, his "seeing" peers had been using the same array of visual tools: they could see the patterns . . . but he could feel them.

# Research and Studies on Visual Mapping

## Nonlinguistic and Linguistic Representations

*David Hyerle, Visual Tools for Transforming Information Into Knowledge, Corwin Press, 2009.*

In what has become a landmark research study cited in many journals and by word of mouth in many schools around the country—Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement—Robert Marzano, Debra Pickering, and Jane Pollock identify nine strategies that directly impact student achievement (Marzano et al., 2001):

1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort
4. Homework and practice
5. Nonlinguistic representations
6. Cooperative learning
7. Setting objectives and providing feedback
8. Generating and testing hypotheses
9. Cues, questions, and advance organizers

The authors, with the Mid-continent Research for Education and Learning Institute (McREL), used a meta-analysis process for analyzing and synthesizing classroom-based research studies to make key generalizations about what works. (For a discussion of the meta-analysis process, which combines results from studies to find "average effects," refer to pp. 4–6 of their book.) One of the top nine instructional strategies they identified is nonlinguistic representations. Following is the authors' background theory and definition of this instructional strategy: Many psychologists adhere to what has been called the "dual-coding" theory of information storage (see Paivio, 1969, 1971, 1990). This theory postulates that knowledge is stored in two forms—a linguistic form and an imagery form. . . . The imagery mode of representation is referred to as a nonlinguistic representation The more we use both systems of representation—linguistic and nonlinguistic—the better we are able to think about and recall knowledge.

This integration and direct use by students of linguistic and nonlinguistic forms is the essence of visual tools. Integrating drawings or pictures in a visual map along with words creates a rich mental bond within the brain and mind for remembering information. This bond is constructed by the learner and thus offers a process for conceptualizing and transforming information into a meaningful visual display of the knowledge base of the learner on paper or computer screen. The maps become an external memory for the brain and mirror for mental reflection and self-assessment for the learner.

The authors continue to both distinguish between linguistic and nonlinguistic forms, and also link the forms, as they represent a range of graphic organizers that represent how to effectively translate research and theory into classroom practice:

Graphic organizers are perhaps the most common way to help students generate nonlinguistic representations. . . . Graphic organizers combine the linguistic mode in that they use words and phrases, and the nonlinguistic mode in that they use symbols and arrows to represent relationships.
*Keywords: nonlinguistic, linguistic, cooperative learning, recall knowledge, advance organizers, graphic organizers*

# Research and Studies on Visual Mapping

## Mapping for Justice: How One Community Transformed GIS into a Tool for Educational Change

*by Verónica Vélez, Equity Alliance Blog, Oct 28, 2013*

It is important to note that while the mothers collectively worked to employ GIS as a transformative practice, they were also quick to note its limitations and possible dangers. Similar to feminist, postcolonial, and other critical geographers who question GIS' lack of attention to issues of positionality, power, and the politicized nature of representation in maps (Kwan, 2002; Knigge and Cope, 2006; Crampton and Krygier, 2006), the mothers pushed back on filtering their story through legitimizing technologies that made real what their own voice should have accomplished but hadn't – the result, they argued, of being racialized as "unfit" to sit at the decision-making table. We engaged in these difficult conversations, and the more we did, the more the mothers became convinced that GIS, when applied critically, could bolster advocacy efforts and catalyze new partnerships to address the geographic footprint inherent in all educational inequity. By redefining GIS mapping as a community-based praxis, the mothers "ground-truthed" the maps, making visible spaces and spatial relationships that otherwise would go unnoticed.

The lessons learned were powerful. The opportunity to collaborate with the mothers on this project has since motivated me to continue exploring the potential of GIS to expose and analyze educational inequities across space that is more critically attuned to map-making. They made clear that GIS cannot be reimagined as a transformative tool for both policy and practice, without the following considerations:

> Local expertise. The mothers' experiential knowledge was key in the development of the maps. Their understanding of the local context drove how we "bounded" space and defined neighborhoods, what types of data we mapped, and which spaces mattered for exploring concerns connected to educational inequity. Youth, parents, community members, and other local experts are essential for employing GIS to explore complex geographies of opportunity.
>
> Maps are a point of departure, not the end goal. GIS maps are incredibly persuasive on their own. Therein lies one of its greatest dangers. The ability of GIS maps to convince at first glance masks the intentionality of the map-maker(s) and their socially constructed view of space and key spatial relationships. If GIS is to be re-purposed for transformative ends, the map-making process needs to be foregrounded and made transparent. Furthermore, the goal should rest in the collaborative inquiry and analysis, of which GIS is only a part. The maps should support and help illuminate a much broader narrative, or rather counter-narrative, driving the overall project.
>
> Developing critical partnerships with GIS access is essential. GIS is expensive and, in most cases, inaccessible to the very communities that are working to enact change on the ground. Partnerships between community groups and key allies with access to the technology are critical. Ultimately, the goal is for communities to employ the technology on their own without depending on outside institutions that can often dictate the terms of the partnership. Until then, though, critical GIS allies committed to a community-based mapping praxis are needed.

*Keywords: justice, mapping GIS mapping, expertise, critical partnerships*

# Chapter 4: Thinking Environments

## People

## Objects

## Materials

# Critical Thinking Environments

Critical Thinking Environments, is an awareness, understanding and a process focusing upon the design, interface and impact with the environment of the physical learning space for an awareness with intentionality. The environment is *The Third Teacher* where we focus on designing the physical space with the *frame of the student* as a root understanding. The *in the eyes* of the student respects and understands the children's frame of reference in regards to how children see, sense, use and interface within the environment, and how the teacher is intentional with their choices, decisions and actions in respect to student engagement and successes with learning. The teacher's decisions:

- with intentionality impact the classroom and school's environment;
- are crucial to the quality outcomes of the children and youth's learning experiences and how they model with the children;
- become a model to how students learn to consider using and creating their critical thinking environment: in school, home and the greater community.

**About, In and With a Critical Thinking Environment**

How we think about and frame our vision for a critical thinking environment begins with:

- *Learning* **About** *a Critical Thinking Environment*
  Creating school-wide and classroom conditions that support thinking environments including how we structure a room, the materials chosen, how we are thoughtful to proximity in the classroom.
- *Learning* **In** *a Critical Thinking Environment*
  Facilitating students in the methods and strategies of learning in thinking environments.
- *Learning* **With** *a Critical Thinking Environment*
  Learning an awareness of our own and others' thinking environments for use in real-life situations for real life problems and solutions.

The key to developing a Critical Thinking Environment is being attentive with intentionality to the impact of decisions with the classroom and school's critical thinking environment.

**Location and use of space video.**

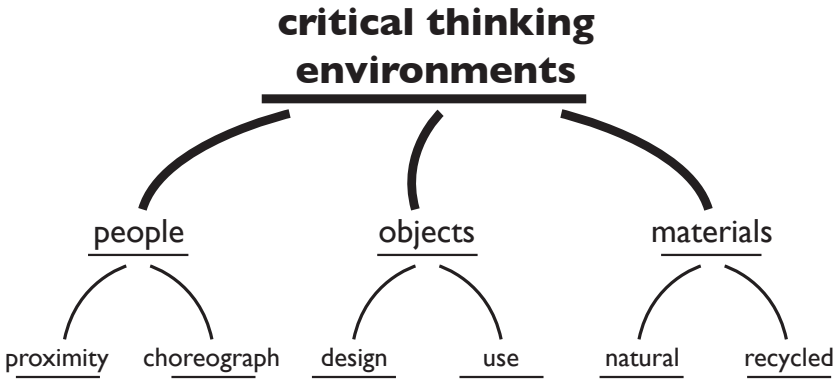
1 **Students thinking on structuring a critical thinking classroom environment in Ethiopia.**

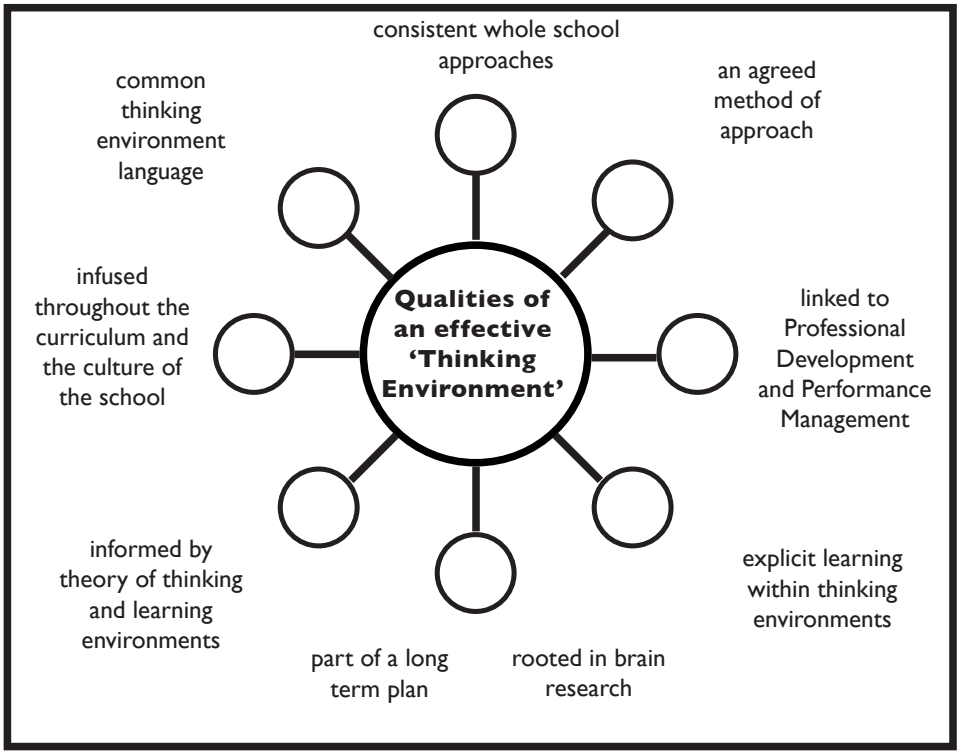
2

# Critical Thinking Environments

The key components of focus for a successful teaching environment include:

- **People** including proximity of the teacher with students and how we choreograph the flow of people.
- **Objects** in the classroom including furniture, lighting and all objects that influence in regards to their design and use.
- **Materials** used including choices and use of natural and recycled things.




In the above visual map, consider and add descriptive words and/or phrases in the empty circles that represent the qualities of an effective Thinking Environment. Think about the ideas framing the empty circles when developing descriptive (attributes) words and/or phrases.

# Critical Thinking Environments

## People

The teacher is the lead *choreographer* on how they influence the use of the thinking environment including where they are located with intentionality, how they communicate, how they use their voices in level and tone and generally interface with the classroom. Their modeling will influence students becoming aware and thoughtful with their decisions on the human interfacing in the classroom, and as a life long learner. Their modeling will influence how their students become equally attentive and sensitive to effectively interfacing with people and their environment.

## Objects

Objects are the furniture, lighting and other elements that we use in our room environment. The selection, use and re-use of the objects are a foundation of the classroom environment. How we as humans and a community of learners interface with the objects is foundational in our learning experiences. It is not about furniture from a specific place is better, it is about making choices which are both effective in use and thoughtful to the origins. Lighting quality will influence our effectiveness and quality of life. It all begins with having a purposeful plan.

## Materials

Materials are loose parts that can be moved, carried, combined, redesigned, lined up, and taken apart and put back together in multiple ways. They are materials with no specific set of directions that can be used alone or combined with other materials. Materials can be natural or recycled.

## Intentionality

Intentional teaching involves educators being thoughtful, purposeful and deliberate in their decisions and actions. Intentional teaching is an active process and a way of relating to the students that embraces and builds on their strengths. Teachers embed intentional teaching strategies in the decisions they make:

- with the materials they select and how they use the materials
- organizing the objects of the physical learning environment
- using the space with their movement and intentional locations in the room in respect to students and what the students are doing
- amplifying student voice and decisions as part of their intentional practices

Teachers recognize that student's learning occurs in social contexts and make deliberate, well-planned decisions to support learning through the student's social interactions with a range of student partners.

# People: Critical Thinking Environments

**How does a teachers proximity in the classroom impact the learning environment?**
**How do students seating arrangements influence their learning?**
**How do decisions of proximity become understood and implemented?**

**Creating a Community for South African Schoolgirls - Michelle Sakayan**

I think of an architect- as a civil servant, and school design as a social act. You're working with a community, and reflecting their needs. I'm really interested in making sure that the mission and the culture of a school shines through in the architecture, that it becomes a mirror of what the teachers, the students, the parents, and the administrators are trying to do there in their daily lives.

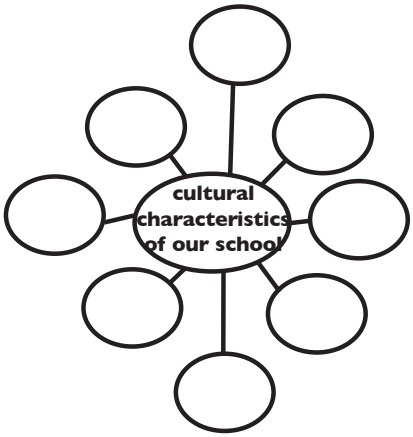

The architectural design of the Leadership Academy for Girls was our response to Oprah Winfrey's dream and mission. This is a college preparatory school, a place to challenge local girls to go to college, and to take their knowledge either back to the town where they're from or to other parts of the world. The school aims to foster the girls' respect and appreciation for their own cultures and for the cultures of others. We went into the communities the girls would be coming from, visited schools, talked to kids. We made sure that the architecture responded not only to the dream and the mission but also to who the girls are.

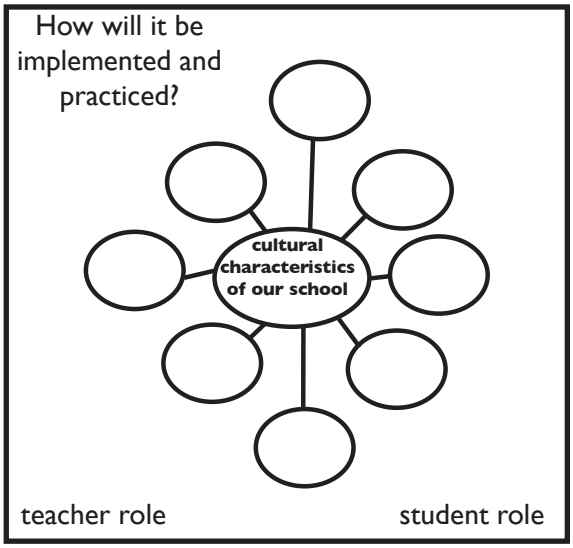
Girls in South Africa, at this age, sit in circles. Boys sit in lines. Girls love circles, for singing and dancing too. They start chanting, and it becomes really rhythmic and contagious. So, on the campus, the buildings wrap around, like arms hugging, to make outdoor living rooms, spaces that encourage e country's future leaders. The girls to feel comfortable in circular gatherings. Every classroom opens onto a garden. It fans out, and beyond it are trees. We've mounded the earth under them into small hills that will seat at least 20 people, so that classes can be held outside. This takes advantage of the climate, and embraces the beauty of the South African landscape.

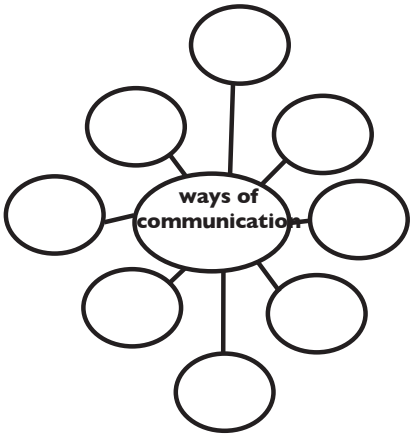
We want the school to be emblematic of South Africa because we want the girls to be proud of their heritage. We used scratched plaster, which is very common in the countryside here: Incredible patterns are scraped into the mud floors and walls of the roundevals, the traditional houses, so we did scratching here too, in a modern way. The girls are coming from 10 different cultural groups. Each culture has beadwork associated with it-anyone who is from South Africa can look at beadwork and say, "that's Zulu," or "that's Tsoto." In the middle of the campus, right in front of the dining hall, which is a popular place to sit, we put 10 columns. Each of the columns is decorated with one of the 10 culture's beadwork, translated into mosaic. It's become a landmark, a place of respect showing each girl that she's important, no matter where she's coming from.

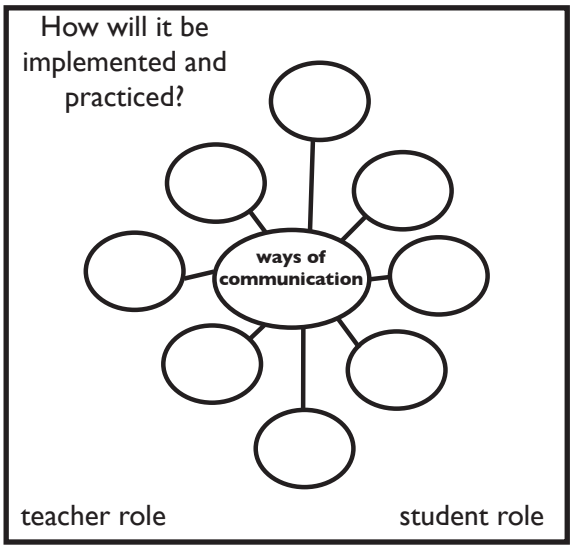
# People: Critical Thinking Environments

The teacher is the lead 'choreographer' on how they influence within the use of the thinking environment including where they are located (with intentionality), how they communicate, how they use their voices and generally interface with the classroom. Their modeling will influence children becoming aware and thoughtful with their decisions on the human interfacing in the classroom.



# Objects: Critical Thinking Environments

**What key design principles can create a classroom that intrigues, invites and stimulates senses?**

**How do design principles, when integrated, impact the overall feeling of a room?**

**How do grounding design principles come to life to impact learning?**

**The following are seven principles that epitomizes critical thinking environments as asserted by a group of authors DeViney et al.**
*Inspiring Spaces for Young Children by Jessica DeViney, Sandra Duncan, Sara Harris and Mary Ann Rody*

**principle 1: nature inspires beauty**
Just as you are immersed in a natural world of sights, sounds, tastes, smell, and textures. Classrooms should reflect the wonders of nature that surround you. As children interact with nature, they deepen their understanding and appreciation of their places and roles as caretakers of the planet.
*What local natural elements are culturally significant to incorporate in your classroom(s)?*

**principle 2: color generates interest**
Color can be a powerful design principle both in positive and negative ways. Proper use of color can create a mood, define a space, and reflect children's homes and communities. Used negatively, color can be overpowering, confusing, and over-stimulating. A neutral background for your classroom with a few well-chosen accent colors will create interest that is focused on the children and adults who inhabit the space.
*How can the use of color be integrated into classroom thinking methods?*

**principle 3: furnishings define space [and use of space]**
Furnishings are used to identify classroom areas such as dramatic play, blocks, art, music and science. When these furnishings are authentic and sized and placed properly, children's play will increase in quality and depth.
*How do we research and plan furnishings that reflect the image of the child (their frame of reference)?*

**principle 4: texture adds depth**
Texture in the environment offers visual interest and depth and provides children with unique tactile experiences. As children interact with sensory elements, they sharpen their observational skills and fine motor abilities through the languages of weaving, sculptures and textiles.
*Look around the room you are in and map things you notice that are three dimensional in texture.*

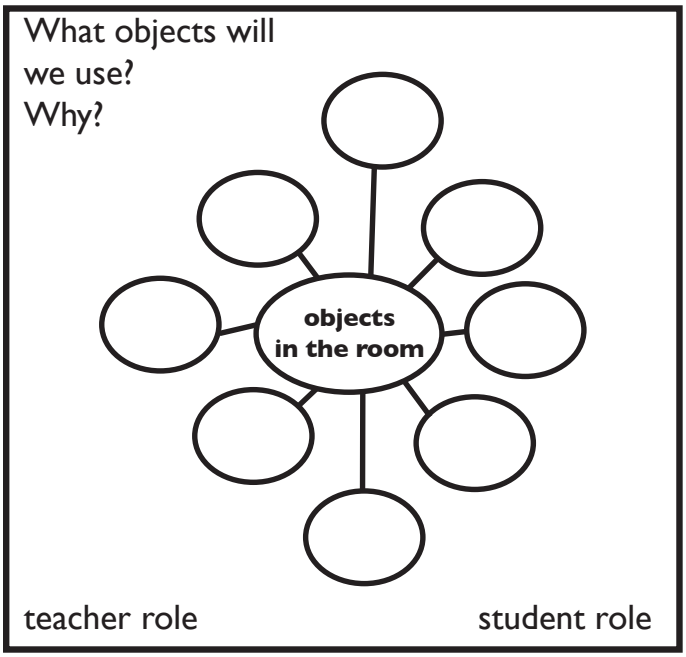
**principle 5: displays enhance environment**
By eliminating clutter, arranging storage materials, and highlighting children's work, the classroom becomes a backdrop to honor all who occupy the space.
*Reflective Question: How will you develop a system to understand the ideal of organizing materials and the ideas to actually enhance the environment?*

**principle 6: elements heighten ambiance**
Multiple sources of light create an ambiance of relaxation and contemplation. By using light in supportive ways, children are able to interact creatively with others and the environment.
*How do you best access multiple sources of light?*

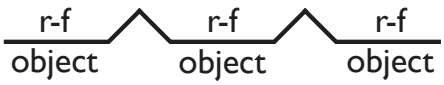
**principle 7: focal points attract attention**
When entering the classroom, a distinct focal point can highlight interactive learning centers, children's work an architectural element, and/or a beautiful artifact. Focal points invite children to actively engage and participate in the Environment.
*Take an environmental walk with a colleague observing and writing down observations of elements that capture you attention and interest.*

# Objects: Critical Thinking Environments

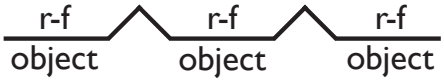
***Using critical thinking tools to consider and implement***




**1** *Write or draw a word or picture of an object the bottom. Add a key attribute or descriptive for each object.*

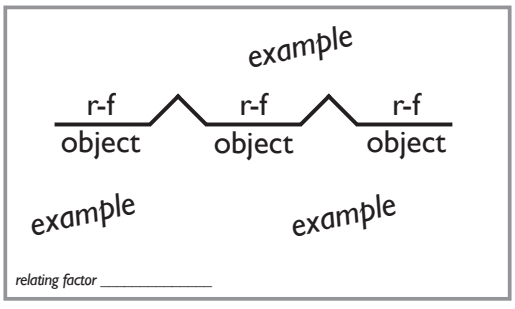



**2** *Write what the 'relating factor' (r-f) is for all the objects in regards to their common attributes or purpose.*




*relating factor* _____

**3** *Draw a frame of reference around your map. Write or draw examples of purpose or attributes for each object's relating factor attribute or purpose.*



# Materials: Critical Thinking Environments

**What materials do we use with learning?**

**How do we select the materials?**

**What is our thinking and intentionality with the materials we use?**

**The following is about materials in a learning environment as asserted by the authors Nicholson.** *The Theory of Loose Parts - Simon Nicholson*

## The Theory of Loose Parts

An important principle for design methodology and how we look at *materials* in our classrooms.

It does not require much imagination to realize that most environments that do not work (i.e. do not work in terms of human interaction and involvement in the sense described) such as schools, playgrounds, hospitals, day-care centers, international airports, art galleries and museums, do not do so because they do not meet the 'loose parts' requirement; instead, they are clean, static and impossible to play around with. What has happened is that adults in the form of professional artists, architects, landscape architects and planners - have had all the fun playing with their own materials, concepts and planning-alternatives, and then builders have had all the fun building the environments out of real materials; and thus has all the fun and creativity been stolen: children and adults and the community have been grossly cheated and the educational-cultural system makes sure that they hold the belief that this is 'right'.

All these things have one thing in common, which is variables or 'loose parts'. The theory of loose parts says, quite simply, the following: By allowing learning to take place outdoors, and fun and games to occur indoors, the distinction between education and recreation began to disappear.

The introduction of the discovery method has been accompanied by intense research into the documentation of human interaction and involvement; what did children do with the loose parts? What did they discover or re-discover; What concepts were involved? Did they carry their ideas back into the community and their family? Out of all possible materials that could be provided, which ones were the most fun to play with and the most capable of stimulating the cognitive, social and physical learning processes?

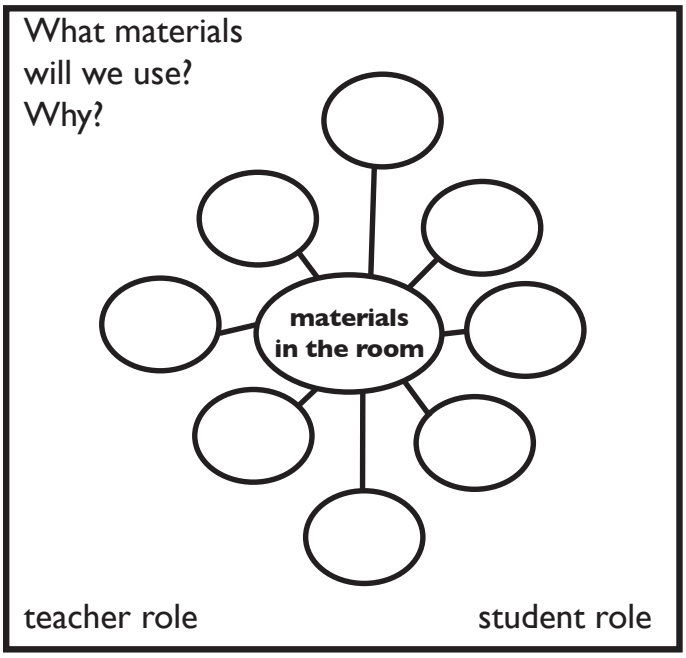
Children greatly enjoy playing a part in the design process:

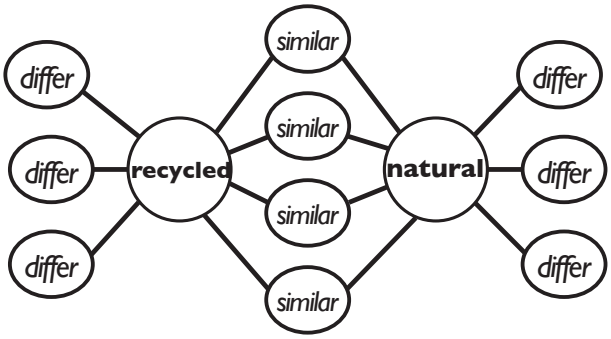
- this includes the study of the nature of the problem;
- thinking about their requirements and needs;
- considering planning alternatives; measuring, drawing, model-making and mathematics;
- construction and building; experiment, evaluation, modification and destruction.

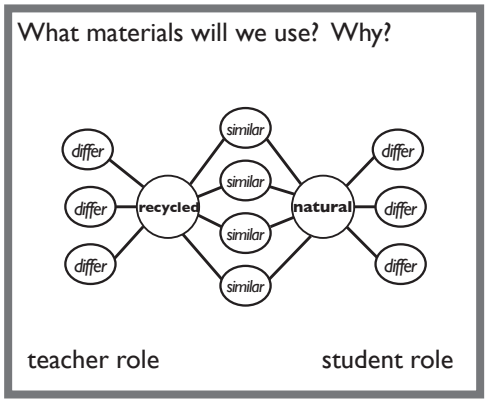
The process of community involvement, once started, never stops: the environment and its parts is always changing and there is no telling what it will look like. Contrary to traditional parks and adventure playgrounds, the appearance of which is a foregone conclusion, the possible kinds of environment determined by the discovery method and principle of loose parts is limitless. The children in the neighborhood will automatically involve all their brothers, sisters and families: this is design through community involvement, but in the total community the children are the most important. It is not enough to talk about a design methodology - the methodology must be converted into three-dimensional action.

# Materials: Critical Thinking Environments

Materials are loose parts that can be moved, carried, combined, redesigned, lined up, and taken apart and put back together in multiple ways. They are materials with no specific set of directions that can be used alone or combined with other materials. Materials can be natural or recycled.



# Chapter 5: Support Processes

# Schema

## Rationale

Schema theory explains how our previous experiences, knowledge, emotions, and understandings affect what and how we learn (Harvey & Goudvis, 2000). Schema is the background knowledge and experience readers bring to the text. Good readers draw on prior knowledge and experience to help them understand what they are reading and are thus able to use that knowledge to make connections. Struggling readers often move directly through a text without stopping to consider whether the text makes sense based on their own background knowledge, or whether their knowledge can be used to help them understand confusing or challenging materials. By teaching students how to connect to text they are able to better understand what they are reading (Harvey & Goudvis, 2000). Accessing prior knowledge and experiences is a good starting place when teaching strategies because every student has experiences, knowledge, opinions, and emotions that they can draw upon. Keene and Zimmerman (1997) concluded that students comprehend better when they make different kinds of connections: Text-to-Self; Text-to-Text; Text-to-World.

### Text-to-Self

Text-to-self connections are highly personal connections that a reader makes between a piece of reading material and the reader's own experiences or life. An example of a text-to-self connection might be, "This story reminds me of a trip we took to my grandfather's apple orchard."

### Text-to-Text

Sometimes when reading, readers are reminded of other things that they have read, other books by the same author, stories from a similar genre, or perhaps on the same topic. These types of connections are text-to-text connections. Readers gain insight during reading by thinking about how the information they are reading connects to other familiar text. "This character has the same problem that I read about in a book last year," would be an example of a text-to-text connection.

### Text-to-World

Text-to-world connections are the larger connections that a reader brings to a reading situation. We all have ideas about how the world works that goes far beyond our own personal experiences. We learn about things through television, movies, magazines, and newspapers. Often it is the text-to-world connections that teachers are trying to enhance when they teach lessons in science, social studies, and literature. An example of a text-to-world connection would be when a reader says, "I heard a program on the radio that talked about things described in this article."

Cris Tovani (2000) offers reasons why connecting to text helps readers:

- it helps readers understand how characters feel and the motivation behind their actions
- it helps readers have a clearer picture in their head as they read thus making the reader more engaged
- it keeps the reader from becoming bored while reading
- it sets a purpose for reading and keeps the reader focused
- readers can see how other readers connected to the reading
- it forces readers to become actively involved
- it helps readers remember what they have read and ask questions about the text

# Schema

## How to Use the Strategy

To effectively use this strategy, spend time doing Think-A-Loud modeling for students how to make meaningful connections. The easiest connection to teach is *Text-to-Self*. Initially model *Text-to-Self* connections with selections that are relatively close to the student's personal experiences. A key phrase that prompts *Text-to-Self* connections is, "this reminds me of...." Next, model how to make *Text-to-Text* connections. Sometimes when we read, we are reminded of other texts we have read. Encourage students to consider the variety of texts they have experienced which will help them understand the new selection. Finally, model how to make *Text-to-World* connections. Building the necessary background knowledge is a crucial means for providing *Text-to-World* support and may be used to pre-empt reading failure. Harvey and Goudvis (2000) caution that merely making connections is not sufficient. Students may make tangential connections that can distract them from the text. Throughout instruction, students need to be challenged to analyze how their connections are contributing to their understanding of the text. Text connections should lead to text comprehension.

## Examples of connecting statements to use as a reference or as prompts for discussion

This part reminds me of....
I felt like...(character) when I....
If that happened to me I would....
This book reminds me of...(another text) because....
I can relate to...(part of text) because one time....
Something similar happened to me when....

**Examples of questions that can be used to facilitate student connections**

***Text-to-Self***

What does this remind me of in my life?
What is this similar to in my life?
How is this different from my life?
Has something like this ever happened to me?
How does this relate to my life?
What were my feelings when I read this?

***Text-to-Text***

What does this remind me of in another book I've read?
How is this text similar to other things I've read?
How is this different from other books I've read?
Have I read about something like this before?

***Text-to-World***

What does this remind me of in the real world?
How is this text similar to things that happen in the real world?
How is this different from things that happen in the real world?
How did that part relate to the world around me?

*First graders in their classroom sharing about Thinking Maps and talking schema video.*

# Benjamin Bloom's Taxonomy of Educational Objectives (Cognitive Domain)

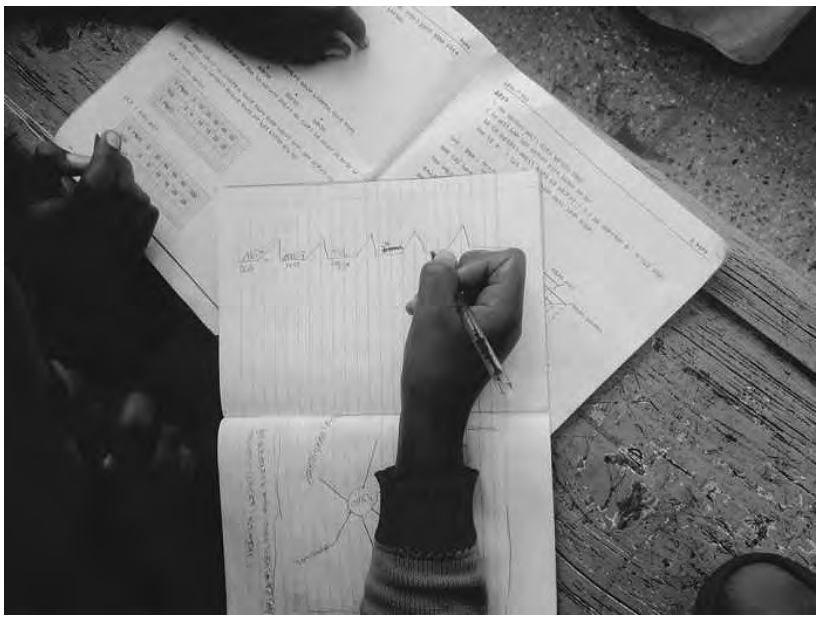
Benjamin Bloom developed the taxonomy in the 1950s in the United States. It is a hierarchy of six types of thinking which become increasingly complex and demanding.

Though the "levels" have increasing complexity, at any age level or at any time within a classroom context a teacher or student may move between different levels. There is no linear sequence required for use of this taxonomy.

The levels of thinking can be applied to developing curriculum units and courses with assessments. This taxonomy is often used for structuring questions at different levels across all levels of schooling and in all areas of learning.

In 2001, Andersen et al. made some significant changes to the original taxonomy. Here is the original model with the revised model by Anderson. Notice that the nouns were changed into verbs to reflect the fact that thinking is an active process.

| **Bloom** | **Revised By Anderson** |
|---|---|
| Evaluation | Creating |
| Synthesis | Evaluating |
| Analysis | Analyzing |
| Application | Applying |
| Comprehension | Understanding |
| Knowledge | Remembering |



# Amplifying Student Voice

In education, student voice refers to the values, opinions, beliefs, perspectives, and cultural backgrounds of individual students and groups of students in a school, and to instructional approaches and techniques that are based on student choices, interests, passions, and ambitions. Generally speaking, student voice can be seen as an alternative to more traditional forms of governance or instruction in which school administrators and teachers may make unilateral decisions with little or no input from students.
—*Glossary of Education Reform, www.edglossary.org*

## Goal

Amplifying Student Voice focuses students on exploring, understanding and collaboratively sharing the How of Learning with peers as learners across all content areas. Amplifying Student Voice will use the critical thinking tools (HOPs) being implemented with the teachers to support student engagement. The students will use the HOPs tools and skills to explore the guiding questions: How do we learn? Who are we? *Who are we* is relevant culture centered content that is reflective of the student's respective diverse backgrounds. This provides teachers, staff and leadership a greater insight to the students as learners and who they are in creating and sustaining a successful learning experience.

## Process

The students will use critical thinking methods (High Operational Practices) to determine what the How of Learning means and reflectively supports their learning. They will then continue use of the critical thinking methods to develop how they will use video to document the *how do we learn* and *who are we* in their classrooms and schools. The critical thinking methods to be used include:

- Collaborative Communities are three supporting methods for a systemic structure for collective and individual success. These include: community building community exercises, collaborative learning methods and peer-to-peer coaching.
- Questions for Inquiry is the use of questioning methods to engage students in education and communities with dialogue. This includes effective methods for developing questioning skills leading to inquiry based discourse.
- Visual Mapping is for organizing and seeing thinking individually and collaboratively to understand patterns of thinking with different cognitive processes along with the frame of reference to understand different perspectives.
- Thinking Environments is an awareness, understanding and a process focused upon the design, interface and impact with the environment of the physical learning space including a person's use of space, materials, and objects.

**Student Voice** — Students are among the first to recognize that there is an enormous gap between their performance and potential. That is why we should give students a voice in professional development, instruction and classroom management. *QR Code to initial pilot Student Voice project designed and implemented for National Urban Alliance in East Allen Public School District by Robert Seth Price.*

# Amplifying Student Voice

The students will use the critical thinking tools as part of the process of storyboarding and recording their story. They will be modeled examples and shown models of excellence to guide their own development of storyboards and video recording. Several potential implementation methods include:

- **Mini Documentary About Their School**
  Students will brainstorm ideas on how students learn in the school community. The students will collaboratively develop a storyboard to complete a 2-5 minute video on their idea of how they learn. The video will begin with a reflective question based on their idea(s).
- **Reflective Practices Learning Centers**
  Students will collaborate in groups of three to record themselves reading, performing or presenting for a 1-5 minute recording. They will then watch the video together (peer to peer coaching) with observations on what they did well and questions using a Thinking Map.
- **How We Do What We Do (DIY – Do It Yourself)**
  Students will storyboard a short learning video on how to do a particular HOPs Critical Thinking method. They will brainstorm their idea with a visual tool (Thinking Map) and develop a storyboard (Flow Map) to sequence the video. The video clips of approximately 2-5 minutes in length can be used throughout the school.
- **Cultural Connections**
  Students in collaborative groups will use key people and facts connecting with their cultural history, relative quotes, their musical interests (e.g. hip hop), current writers to learn from and express their interests. They will storyboard their ideas with Thinking Maps and develop questions to research for their development of articles, posters, media presentations, still photography and/or video.
- **What Do You Stand For?**
  Students brainstorm things about their community that interest them that are of social concern (homelessness, parks…), then they interview a representative for the community of interest (e.g. a woman's shelter director for homeless) with questions they develop while also taking photographs and creating drawings. They ask each interviewee what they stand for. Students develop an understanding to consider what they stand for themselves. This can set the stage for a 'call to action'.
- AND — Ideas Developed by the Students

**Monitoring Progress and Determining Success**

Students use of critical thinking methods to develop their student voice projects will provide an assessment of the thinking, and the video recordings or media presentations will provide a means of determining progress and success. The video recordings will initially be used with teachers to see what they learn about the students.

**To Consider**

To begin incorporating youth voices, it is important to listen to and welcome a range of student opinions in decisions about academic content, discipline, school culture, free time, the physical space of the school, and family partnerships. They will consider individual student's wishes about which adults in the building will best teach and counsel them.

# Amplifying Student Voice

Five Ways to Welcome Student Input from Giving Students a Voice in a Harvard Graduate School article in *Usable Knowledge, Harvard Graduate School of Education, by Leah Shafer, 2016*:

- Regularly solicit student feedback.
- Engage students in studying and assessing their school.
- Include authentic student representation on leadership teams.
- Invite students to any discussion related to their own learning.
- More broadly, consider young people as stakeholders and partners in their schools.

**Equipment Needs**

For video a smart phone or tablet with video is fine, as is a digital camera that has video capabilities. Quality sound is always important: e.g. using an external mic. It is helpful that the video is easily edited with software on the device (e.g. imovie with iphones or ipads). If planned well, editing should be at a minimum. Performance is important including a setup and place to project the completed video clips. An additional idea is a monitor or projection that can be dedicated to being a Kiosk in the front office.

**Why and How Video for the School Community**

- Children and Youth — if children and youth learn to influence media, they will be more attune to when they are being influenced.
- Educators — peer to peer coaching so we can actually see what we thought we did.
- Action Research — to reflect on practice.
- Documenting and Documentaries — to share the story.

**What Makes Roosevelt Excellent: Students Documenting Their School**

A fifth grade classroom of 34 students created their documentary of the school over three half-day sessions. The first day focused on video exercises. The second day the young filmmakers used Thinking Maps to storyboard their mini productions. The whole class then observed one filmmaking group make a film. Each group was composed of four to five students including a director, camera person(s), and interviewer(s). The third day was reserved for filmmaking purposes for all groups. All questions for the interviews were developed by the students. The video included The Documentary by the students; the video exercises (thaumatrope, introduction exercises, rotating in rhythm); and documenting the documentary.
https://vimeopro.com/user12997522/student-voice-documenting-the-school

**students documenting their school**

School Portfolio: Interviewing on Video and Documenting in Print.
The following are examples of project documentation include action research, use of video, reflective print material and more.

**school portfolio video**

Roosevelt UFSD in the New York City area. This includes interviews with students, teachers, school leadership and supporting professional development mentors. The video clips are short and the print materials are transcribed from the video interviews.

- Video: https://vimeopro.com/user12997522/roosevelt
- Print: http://www.eggplant.org/pdf/roosevelt-poster-collection1.0.pdf

**school portfolio print**

# Research Connecting to Student Voice

*Read the following articles on research on Situating Learning in the Lives of Students and Deconstructing Race. A suggested sequence of methods to discuss the articles includes:*

**Guiding Questions**

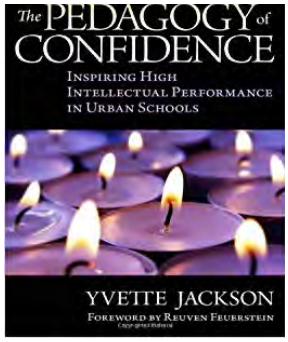
- What are your questions after reading this research?
- How does this research apply to your school?
- How would you map out a plan to implement practical tools and practices to support the quality of the school's social capital?

**Research in Action**

1. Use Collaborative Questions to respond to, *What are your questions from reading this research?* Then in small collaborative groups, write several questions from the Collaborative Questions exercise with each question on a separate piece of paper to sort (see the categorization map and section on inductive sorting). Sort the questions into categories. Label a top question for each category.
2. Use a visual tool to map: How does this research apply to your school? Possible maps include brainstorming, cause and effect, comparing or a map that supports your thinking.
3. What are the steps and parts of the steps to implement a plan? Use a Flow Map to sequence a timeline.

## Pedagogy of Confidence: Situating Learning in the Lives of Students

*Jackson, Yvette, The Pedagogy of Confidence: Inspiring High Intellectual Performance in Urban Schools. New York: Teachers College Press, 2011.*

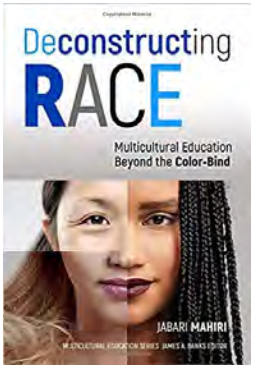



Situating learning in the lives of students engages student participation by facilitating their discovery of relevance and meaning in academic learning. It has long been established that engaging anyone in learning requires connecting to that person's cultural context or frame of reference (Feuerstein et al., 1980, 2006; Vygotsky, 1978). Lave and Wenger (1990) extended this understanding by pointing out that learning is a function of the activity, context and culture in which it is situated. However, most classroom learning activities that involve abstract knowledge occur out of context, hampering cognition and learning. This lack of contextualizing is an instructional reality for school-dependent children. Most often, the examples and connections they are provided come from the cultural context of the teacher or from a community to which they do not belong (Lave & Wenger, 1990). Like all students, these individuals have vast knowledge from their life experience that is organized into elaborate networks of abstract mental structures (schemata) that represent their understanding of the world. When they must assimilate new conceptions of understanding or schemata that seem to contradict their existing understandings in relation to their life experience enables them to recognize the connections to what is being introduced and what they already know and suppositions they have already formulated, minimizing internal conflict and maximizing comprehension (Lave & Wenger, 1990 SIL International, 1999). Working from the personal cultural context of students engages and heightens their attention because the engagements are perceived as meaningful.

# Research Connecting to Student Voice

## Deconstructing Race: Key Concepts

*Mahiri, J. Deconstructing Race : Multicultural Education Beyond The Color-Bind. New York: Teachers College Press, 2017.*




We are all born into a social position and with physical features that contribute to our sense of who we are. But social positioning and physical features are not (or should not be) determinative of identity. Against the grain of social constructions, this book reveals how people's identities are ultimately determined by a wide range of personal-cultural practices, choices, and perspectives. The practices engaged in throughout our lives are tied to major and minor life choices as well as perspectives we develop about ourselves and others at the intersection of personal, social, material, and spiritual worlds. The lives of the interviewees provided evidence for how the intersections and interactions of these components reflected the actual identities of individuals, rather than the essentialized racial categories that Brodkin (1998) noted are "assigned" by white supremacy.

"Micro-cultures" (with a hyphen) is a key concept that captures the numerous components of positioning, practices, choices, and perspectives that make up the unique identities of each individual. This idea builds upon, but is distinguished from, Banks' (2013) concepts of "microcultures" (without a hyphen) and "multiple group memberships," as discussed in Chapter 9. I describe micro-cultural identities and practices as being mediated by language, and, like language, as being both acquired and learned. But they are also constituted and mediated through digital texts and tools that dramatically increase the range of how they can be engaged or enacted. At any moment, the vertical axis of these virtually limitless combinations of components—like fingerprints—reflect and define the ultimate uniqueness of individuals. On multiple horizontal axes, alignments of components also reflect similarities of individuals to specific others in shared or connected experiences within histories and geographies-within time and space. Unlike fingerprints, the combinations of micro-cultural components are dynamic and constantly changing (Mahiri, 2015; Mahiri & Kim, 2016; Mahiri & Ilten-Gee, 2017). From this perspective each life might be seen as a river fed by many distinct tributaries flowing into the sea of humanity.

The core argument of this book is that the continually emerging, rapidly changing micro-cultural identities and practices of individuals cannot be contained in the static racial categories assigned by white supremacy.

# Research Related to Equity and Human Rights

**An Anticolonial Framework for Urban Teacher Preparation**
*Jamila J. Lyiscott, Limarys Caraballo & Ernest Morrell, Journal of The New Educator, Volume 14, 2018, Issue 3, Pages 231-251 | Published online: 07 Feb 2018*

**Abstract**
Our contemporary apprenticeship model of teacher education often places preservice teachers in learning environments where they never witness the types of dynamic and engaged practice they desire to emulate. Either there are structural limits within the classroom placed by school or district leadership or there are preselected veteran mentor teachers who do not value the same kinds of critical practice. These challenges necessitate a radical rethinking of how and where preservice teachers learn their craft. We pose an anticolonial model of teacher development, one that situates teachers and students in collaborative networks where they work powerfully together via Youth Participatory Action Research on projects that have significant social, cultural, and digital relevance. The purposes of this article are (a) to propose the essentiality of anticolonial approaches to reimagine the preparation of preservice teachers and (b) to demonstrate how these approaches are enacted in our own practice within critical, project-based clinical experiences with preservice educators toward the development of an anticolonial model for urban teacher preparation.

# Content Related to Equity and Human Rights

**A History of Ethiopia in Pictures: From Ancient to Modern Times**
*By Geoffrey Last, Richard Pankhurst, Eric Robson, Arada Books, 2014*

**A People's History of American Empire (A Graphic Adaptation)**
*By Howard Zinn, Mike Konopacki, Paul Buhle, Metropolitan Books, 2008*

**A People's History of the United States: 1492 - Present**
*By Howard Zinn, HarperCollins, 1999* **An Indigenous Peoples' History of the United States**
*By Roxanne Dunbar-Ortiz, Beacon Press, 2014*

**An African American and Latinx History of the United States**
*By Paul Ortiz, Beacon Press, 2018*

**Illustrated Version of the Universal Declaration of Human Rights**
*Illustrations By Yacine Ait Kaci, United Nations, https://www.un.org/en/udhrbook/*

# Chapter 6: Case Studies

# Case Study: Thinking Schools Tigray, Ethiopia

## Overview

The collaboration with Tigray Development Association and Thinking Schools Ethiopia began through social media leading to a multi-year collaboration. The collaboration was a grass roots initiative that developed support from SIDA through Initiative Africa (girl empowerment funding) and Thinking Foundation. The Thinking Schools Tigray Ethiopia project was started by Robert Seth Price and was preceded by collaborations with the Education Bureaus in Addis Ababa and Hawassa.


## Goals

The goals were creating a strategic Thinking Schools model with two primary and one secondary school from each of 12 Woredas (similar to counties in the USA). The training included a significant number of trainer of trainers to build capacity to sustain the initiative. A relationship with the Tigray Education Bureau, Tigray Development Association and Mekelle University (in Tigray) were key stakeholders to develop and sustain the Thinking Schools Ethiopia: Tigray initiative.

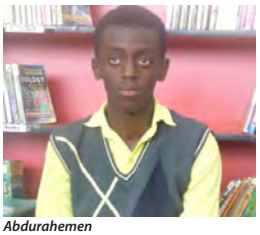
## Implementation


- Initial training of 60 experts from the Tigray Education Bureau.
- Training Two Trainer of Trainers (equal number of women and men) from each of 36 schools for four days. The 36 schools were from 12 Woredas with two primary and one secondary school from each Woreda.
- Divided the trainings across the Tigray region into three strategic locations. Each pair of Trainer of Trainers then brought one half of the staff from each school to one location for a two day training. The trainer of trainers were guided by Thinking School Ethiopia trainers (Robert Seth Price, Atsede Tsehayou, and Dagim Melese) to lead their schools in the training. The two days whole staff training was undertaken for approximately 400 teacher educators in each of the three locations (1200 total teachers) under the leadership role of the Trainer of Trainers (ToT). The ToT trainers played a key role in effectively transferring through modeling the essential components of the training to ALL educators from their school and region. After the two days training teachers from 2 primary and 1 secondary schools from each Wereda came up with their plan (in a Flow Map) of whole school implementation of Critical Thinking in their respective schools.
- Ongoing site visits to all schools multiple times by the lead Ethiopian Country Trainers Atsede Tsehayou and Dagim Melese. Documentation of their site visits in text, still photos and video clips is online at www.thinkingschoolsethiopia.com website.

**Tigray, Ethiopia Video**


# Thinking Maps®: *Developing Confident & Competent Thinkers & Learners - Bikolos Nur Academy*


*Hannan*


*Abdurahemen*


*Sabontu*


*Hussien*

## Thinking Maps® for Organizing Thinking

*Bikolos Nur Academy, Addis Abba, Ethiopia Students and Teachers share their reflections on the use of Thinking Maps® as part of Thinking Schools Ethiopia*

### *Students*

**Hannan:** I really think that Thinking maps make a big difference in my life because before I really didn't read my books much because it takes too much time to understand, but now I am interested to open my exercise books make Thinking Maps to actually study and know what I am reading. We can be independent and learn by ourselves, because Thinking Maps are our teachers. They make everything easy so that we can read and remember — it makes you visualize things. Thinking Maps capture our thinking in our mind.
*Hannan Abdulfetah, Grade 9 Student*

**Abdurahemen**: Thinking Maps have helped me a lot in studying. Next year I am taking national exam. I am preparing my summaries using Thinking Maps because it is taking a shorter time with Thinking Maps. It is more effective because by looking at the circles and the other maps, I can remember what is inside and that makes it easier for me to study.
*Abdurahemen Kassim, Grade 9 Student*

**Hussien**: We are using the maps very effectively and the class is now more student centered with everybody participating. The eight Thinking Maps are so helpful because we can do our work easily — for example our book is a huge book so it is tiresome and consumes much time. But you can use a piece of paper and draw maps and easily analyze the things about the subject in few minutes. When we do Thinking Maps in group work everybody is participating on it, so it is going to be fun and interesting.
*Hussien Abdulnessir, Grade 9 Student*

**Sabontu**: Thinking Maps are very easy to use and to remember. Before when we work in groups there was not much argument but now we can easily visualize things and remember what you see in pictures in the mind. These maps are like pictures and have different designs and very easy to remember.
*Sabontu Ali, Grade 9 Student*

### *Teachers*

**Adefres**: I really want to thank the thinkers who give us Thinking Maps and make us think to ourselves and for our students. Thinking Maps are very helpful. I have spent many years teaching chemistry and I have been trying many methods to visualize chemistry to students. The thinking maps made everything clear in these 2-3 weeks after the training.
*Adefres Zerihun, Vice Director and Chemistry teacher*

**Huda**: Thinking Maps makes our life easier and help us impart lessons which were difficult to comprehend. The students have accepted Thinking Maps in a very special way and related to the maps. I hope the Thinking Maps will go on so that we can give them what they deserve and we can get from you what we deserve.
*Huda Seid, Vice Director and English teacher*

**Mohammed**: Starting with the Thinking Schools training, I understood that the training and the Thinking Maps is participatory. We were at the training on a Friday and started implementing Thinking Maps on Monday. The training has helped me a lot because before I had hard time delivering my subject to my students. But after learning the Thinking Maps and introducing the eight Thinking Maps to my students, my subject is understood more easily. We are always told about student centered teaching but it is with Thinking Maps I could involve all types of learners in my class. This is also the policy of our country and if we regularly implement them and get reference materials, we can even do better. Both the staff and the students have loved it and we thank you.
*Mohammed Awol, Social sciences teacher*

**Usman**: I have used all the Thinking Maps except the Bridge Map in my grade 3 lessons. I am very excited. My students love the Thinking Maps and are internalizing the maps. The Thinking Maps are helping us to identify the level of the students. For example, some students remain in the circle map and others apply the other maps achieving higher order thinking in Blooms Taxonomy. So generally I am very happy as the Thinking Maps assists us in effective teaching methodology and students. Recent results have shown slight increment of growth from last quarter over a period of three weeks.
*Usman Mohammed, Grade 3 Science Teacher*

**Zewdu**: Thinking Schools Ethiopia is very interesting starting from the training. The Thinking Maps makes our minds visualize information. In this short time students are referring to and using the Thinking Maps more than the previous methods. All students are more active than the previously because they can easily understand the topics and remember what they are learning.
*Zewdu Hailu, Vice Director and Physics teacher*

### *Leaders*

**Fatuma:** The first time I took the training was through our school network with around 15 other schools. By then, I was convinced and believed this is the way to quality education. After the training, immediately, I introduced Thinking schools to my school. Now, it is a month since its introduction and within this time I have seen a big change. The students are starting to think clearly and improved creativity as well as creating their own way of thinking and simplifying things.
*Fatuma Ahmed, Founder and School Director*


*Fatuma*


*Adefres*


*Huda*


*Mohammed*


*Usman*


*Zewdu*

***Thinking Schools International***
*www.thinkingschoolsinternational.com*

***Thinking Schools Ethiopia***
*www.thinkingschoolsethiopia.com*

*www.thinkingfoundation.org*

*www.thinkingmaps.com*

# Case Study: Critical Thinking with Visual Tools, USA

**Roosevelt Union Free School District**
**New York City, NY**

The Roosevelt Union Free School District project was with Thinking Foundation. I documented the use of visual maps through interviews of teachers, students, district leadership and consultants on this district wide Thinking Schools and Thinking Maps project. I was cinematographer, interviewer, video editor and implementation of use with the video clips. The documentation included video and 2D print posters that were developed from transcribing text from the video interviews. These interviews were conducted multiple times over a two year period.

The qualitative process included insights into implementation of the multi-year project with educators, students and leadership. Additionally compilation video clips were edited and shared with the school board.

Ideas implemented included the print documents to post and kiosks to share the video clips. The purpose was for qualitative analysis as much as affirmation to support implementation of the initiative.


**www.vimeopro.com/user12997522/roosevelt**


**www.eggplant.org/pdf/roosevelt-poster-collection1.0.pdf**

Roosevelt Video Collection

Roosevelt Print (PDF) Collection

# Concluding Remarks

This guide, *Mobile Critical Thinking Tools for Equity in Teaching and Learning*, was designed as a teaching and learning tool for educators. The purpose of this guide was to equip teachers with concrete tools that allow for student engagement, critical thinking and life long skill building.

In this manual we discussed collaborative processes, questioning methods, visual tools, thinking environments, support processes and case studies over six chapters. Each chapter contained examples, must known terms, exercises and research. After participating in a training of this nature and reading this guide, you are prepared to mobilize student engagement utilizing critical thinking tools and skills.

***Education is a Human Right***

*United Nations Universal Declaration of Human Rights*

# Robert Seth Price

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Robert Seth Price's most recent appointment was a full time position developing and implementing a school-wide critical thinking curriculum for all K-6 classes in an urban public school. Concurrently, he also served as a Senior Mentor with National Urban Alliance with whom he has worked for over 20 years. He designs and facilitates professional development trainings with whole school districts, schools, hospitals, and non-profit organizations on domestic and international stages. Prior to this, he taught grades 1-3 for ten years in urban public schools. He also designed and taught elective courses at a public arts high school, and was adjunct faculty for literacy and technology classes at the university level for elementary teachers in Los Angeles and Brooklyn.

Robert understands the power of lived stories. He uses the student's and participant's voices as part of his participant centered collaborations. He incorporates technology, social media, art, and music into his trainings and implementing his collaborations. He understands networking; system development; grass roots project development; progressive education implementation; and facilitating professional leadership development.

This guide and my work is rooted in the gifts from collaborating and learning with many people globally. I am always learning from a wide range of professions, interests and experiences. While many of my influences are in education, the wider breadth of learning have come from my connections with the arts, social work and other professions that keep my mind opening and heart understanding. Dr. Jacquelyn C. A. Meshelemiah's insightful contribution's on Human Rights for this guide provides a grounding and guiding beacon for learning and education with and of equity for all children and youth. And I thank my mom Janice, who looks from above reminding me 'there is so much to learn and not enough time', and my inspiration above whom reminds me always 'life is short'.

Robert Seth Price's website – www.eggplant.org – provides further information on recent and past projects.