Thinking Schools International™

Growing Thinking Schools

From the Inside Out

Dr. David Hyerle and Robert Seth Price

Transformational Professional Development for Schools

Thinking models, processes, skills, strategies and tools for transforming the whole school environment.

www.thinkingschoolsinternational.com

Certified Facilitators for Thinking Schools™
Locally and Networked Globally

More than training... We transform...

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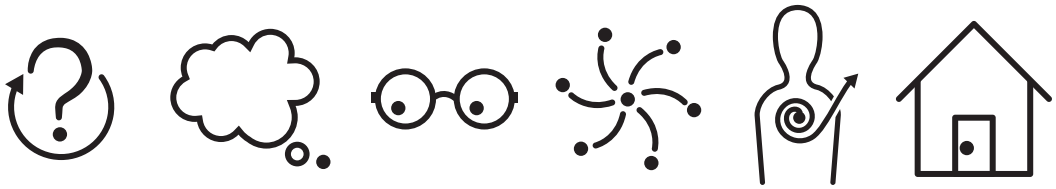

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Thinking Schools International, LLC

Our Purpose

Thinking Schools International, LLC is a company focused on facilitating expertise within schools, school systems, and across regions and countries for transforming the practice of education toward the collaborative development of a wide range of thinking processes of all members of learning organizations.

Our Process

Thinking Schools International, LLC conducts direct training with individual learning organizations, certifies trainers at different levels of expertise, while also welcoming other organizations to engage with us in licensing agreements for using these materials and processes around the world.

Contact Info

For information about training, training of trainers, and the expansion of the Thinking Schools design in your area, please contact: Richard Cummins, CEO Thinking Schools International, LLC, Swindon, England.

Website

Please visit our website for information about upcoming training opportunities, research and documentation on different approaches to the facilitation of thinking, and for documentation and research on Thinking Schools around the world. There are links to leaders in the field of the development of thinking and learning. If your learning organization is working with us over time, you will be given access to an online collaborative network of educators from around the world who are sharing their experiences and new strategies, insights, and outcomes.

Thinking Schools International

www.thinkingschoolsinternational.com
Thinking Schools International, LLC

How to Use this Guide

Growing Thinking Schools is a *guide*, much like a travel guide that you have closely looked through before visiting a new place, or visiting a website with information about different pathways for investigating a new concept. This guidebook is only used with support of a certified Thinking Schools International trainer who will guide you and your colleagues through a process of:

- envisioning what a "Thinking School" might look like in your culture and environment;
- considering the different possible approaches you may take; and
- beginning the planning stage for the short and long term process of explicitly and systematically integrating "thinking" processes into the existing "learning" processes within your school.

This guide does not provide an answer, but offers starting points for the journey toward becoming a "Thinking School" of the 21st century.

Using the Working Field Guide

At the back of this guide is a pullout document called the *Working Field Guide*. This is like a journal that you might take along on trip for writing down your ideas. In this case, you will be collaboratively mapping out your ideas and reflecting on uses of thinking tools, techniques and strategies with your colleagues. It is a place for you to be creative, to capture ideas, and for reference as you move forward.

When you see this symbol, refer to your Working Field Guide.

Creating a Field Guide for your Students

This *Working Field Guide* is also a purposeful model for what we suggest you try out with your students. When students have a place to keep track of new ways of thinking they will engage in a reflective process, as you have, in investigating and improving their ability to use new thinking processes over time. We hope you create your own Field Guide design for students that is unique and appropriate for your environment and that reflects the vision your school has taken on for becoming a community focused on the development of every child's abilities to think in many different ways... and to improve their abilities to investigate how to integrate these different approaches as they mature.

Preface

Growing a Thinking School: The Journey Begins

Thinking Ahead

Before starting off on a journey, it is wise to reflect on where you have been, and think ahead to where you want to go. This facilitator's guide, *Growing Thinking Schools*, is a common text through which you and your colleagues may think about your school as a whole, the qualities and resources of your school, and the varied approaches to teaching, learning and leading that inhabit and give character to your school. We also believe that this process will support your own thinking, teaching, and learning over time.

Our work with you in *Growing Thinking Schools* is to support and engage you in the process of investigating new possibilities for exploring students' growth as thinkers and learners. The nurturing of each child's thinking, language, content knowledge base, and physical and social-emotional development needs constant care, and each child has his or her own developmental growth pattern. This is exciting to consider and a challenge!

A Vision

The first three stages of the journey as presented in this guide are to engage you in reflective questions such as:

- What is the relationship between "learning" and "thinking"?
- What is a "thinking" student?
- How have other schools created Thinking Schools?
- What are a variety of ways, definitions and approaches to thinking?
- How do these beliefs fit within your belief system?

You will also learn some new techniques and see how approaches you are already using may be enhanced with explicitly teaching students FOR, OF, and ABOUT thinking.

Planning and Leading the Journey

As facilitators certified by *Thinking Schools International*, we are guides and offer our collective background, experiences and knowledge to help you plan *your own path* over time as an ever-evolving Thinking School. Your work and design will be unique. We will have answers to many of your questions and/or be able to seek out our links to experts in the field.

What we don't have is a solution for what your school "should" look like. This does not fit with the purpose of our work: we do not believe that there is one way to becoming a Thinking School. There are unique pathways for each school, within each community, within the diverse countries and continents on this planet. Our time with you will include starting points for considering different pathways.

The last stage as shown in this guide includes resource documents. We might use these documents with you and also your drive and/or leadership team over time to develop a plan for implementing your thinking and evolving vision of a Thinking School.

A Global Journey

We know that we will learn from you along the way and also that we will be able to connect you with people and schools around the world who are also on a similar journey. We will be your collaborative partner in this journey.

Our website will be a common ground for sharing the insights from your experiences and the journey ahead around the world. Every person (and community) has their own ways of thinking about the purpose of schooling and how to define learning and refine practices to support thinking.

We do not have one definition, but we do have much to share about this new direction in education around the world. There is a growing awareness and with that a global network of like minded educators who want to share in this new journey, this new adventure. You can find them at: www.thinkingschoolsinternational.com

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Participants Guide: Growing Thinking Schools

Thinking Schools International

Collaboration, Authorship, and Appreciation

The process of conceptualizing, writing, and designing the *Growing Thinking Schools* Participants and Facilitators Guides has been a dynamic collaboration reaching back over many years and across many countries.

During a week long working session In 2010, six educators with a wide range of experiences, brought their ideas together to build the contents, processes, and form of these guides. Teresa Williams, Martin Bell, and Richard Cummins from the Kestrel Consulting group in the UK and David Hyerle, Robert Price, and Larry Alper from the Designs for Thinking group in the US focused on creating practical guides linked to a vision of transformational change.

David Hyerle and Robert Price, the primary authors of the two guides, were then offered the challenge to integrate the reflective and refined thinking of this group into a tangible document: the detailed language and graphic design of the 4 Stages and 14 Steps of the journey toward Growing Thinking Schools.

All of us in this process appreciate the constant flow of ideas from our colleagues with whom we have worked over the years. We offer our deepest thanks to the late Professor Emeritus Dr. Bob Burden of Exeter University who generously offered his lifetime of experiences and research toward the development of thoughtful students and their teachers.

We also thank those educators in schools who have offered us their insights over the years for not simply "reforming" schools for the moment, but engaging educators around the world in "transforming" schools into places where children learn to think for themselves and, thoughtfully, with each other.

The Growing Thinking Schools Inside Out Guide and the accompanying Growing Thinking Schools Facilitators Guide were designed by Robert Price.

Thinking Schools International

STAGE 1 GETTING STARTED

Step 1 Who are We Together?

Step 2 Why a "Thinking" School?

Step 3 What is the vision of Thinking Schools International?

Step 4 How are we going to work together?

Step 5 What does a "Thinking Student" look like?

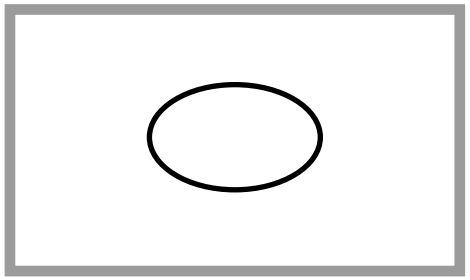
Who Are We Together?

- Personal Frame
- Circle Map
- Learning Cycles

Visual Mapping - Personal Frame of Reference

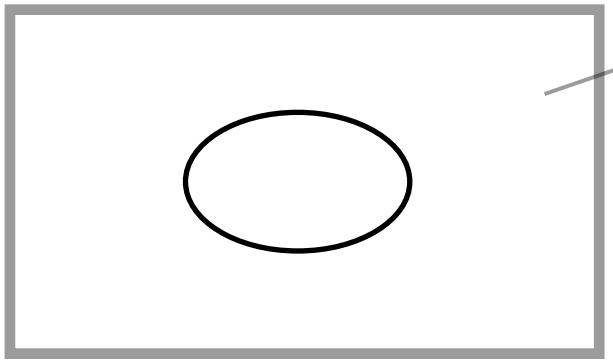
To get started, here is a visual mapping process called your Personal Frame of Reference. This process will support us in being reflective of our experiences and how the become our Personal Frame of Reference.

1.



- use a 8 1/2" x 11", A4, or similar blank paper
- tear a whole in the middle to form a 'frame'
- use a pen or marking pen
- use words (any language), drawings and/or photos

2.



- descriptive words of your personal attributes
- important people in your life
- influential people in your life
- important events in your life
- important places in your life
- your education values

3. **After you and a partner have completed your personal frame of references, pair up together and share your ideas by asking:**

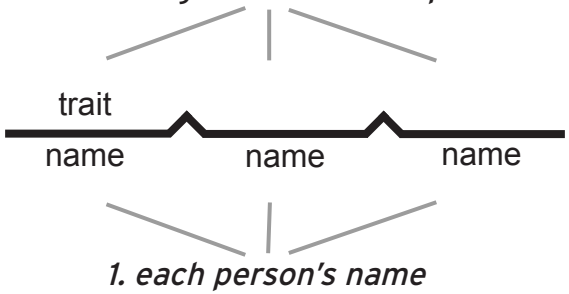
What are some of the similar and different bits of information in the maps?

We will then share the most important information to our small groups.

Visual Mapping - Connecting and Learning Of, For and About Each Other

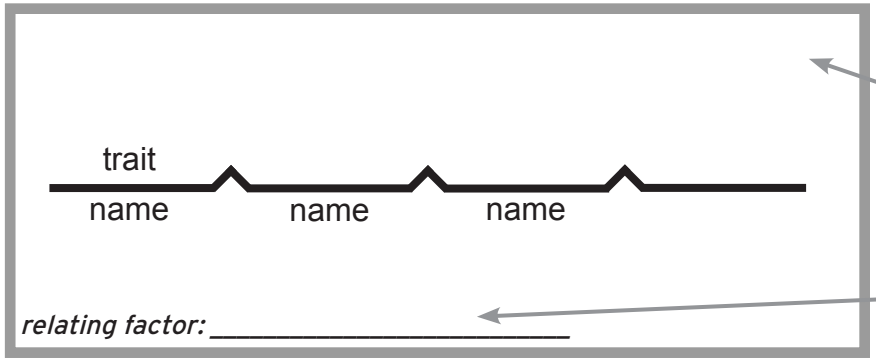
We will continue with a visual mapping process called a Bridge Map (Thinking Maps®) with a Frame of Reference. This process will support us in being reflective of our personal experiences along with others in our small group.

1.



- use a 8 1/2" x 11", A4, or similar blank paper
- construct a Bridge Map as modeled (see your Thinking Maps® guide).
- use a pen or marking pen
- use words (any language), drawings and/or photos
- write each person's name (bottom)
- write a corresponding factor for each person that 'relates to one another

2.



Reflective Frame of Reference:
How is the relating factor support and contribute to who you are?

write what the relating factor for the 'traits' is

3. After you and small group have completed your Bridge Map with the frame of references, gather with another small group and share your ideas by asking:

What are some of the similar and different bits of information in the maps?

We will then share the most important information to the collaborating small groups.

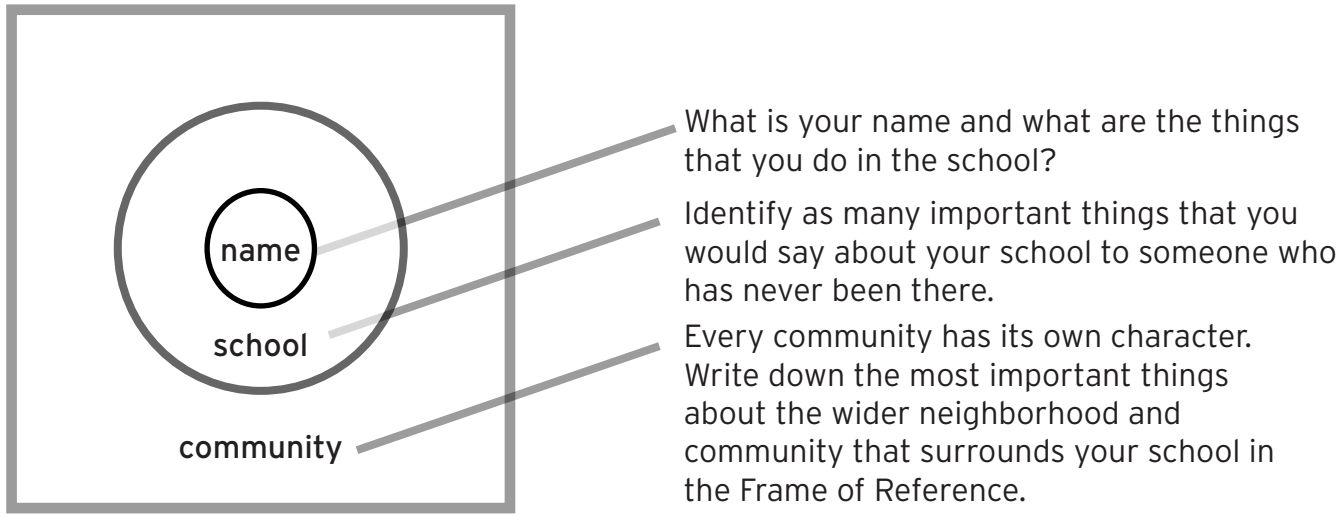
Who Are We Together?

- Personal Frame
- Circle Map
- Learning Cycles

Visual Mapping - Circle Map with Frame of Reference

To get started, here is a visual mapping process called Circle Map (Thinking Maps®). This process will support us in getting a view of the school and the environment around the school. Take out your Working Field Guide for your mapping process.

Pg. 02-03

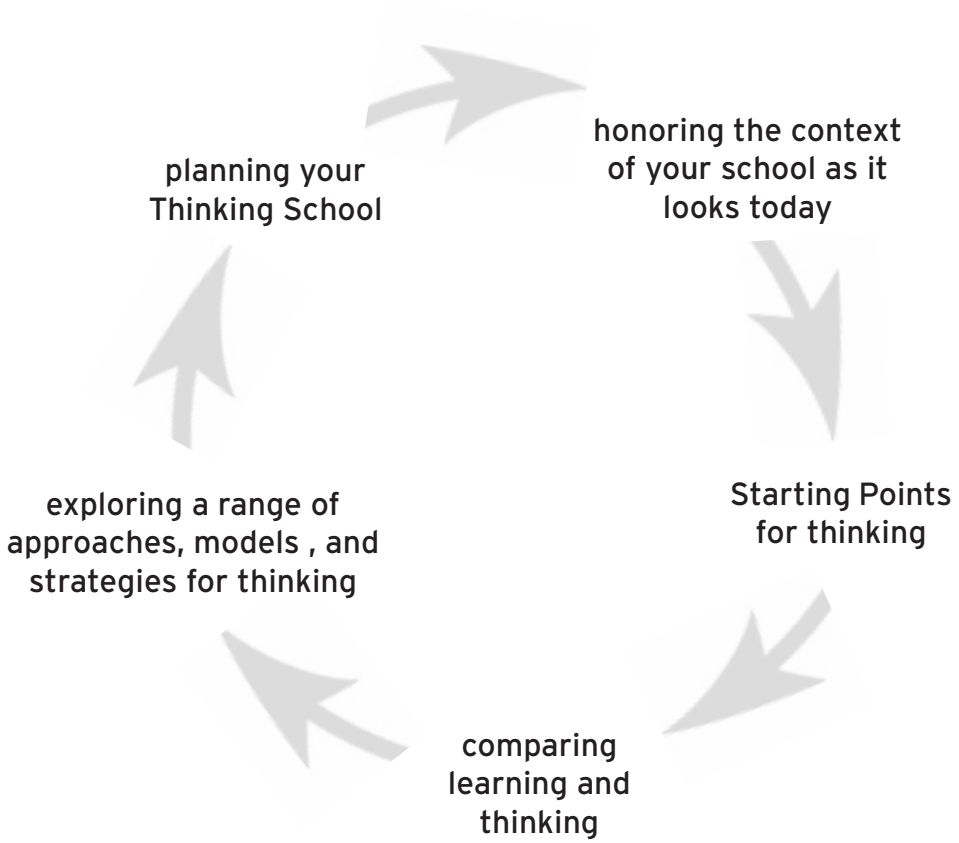


After you and a partner have completed your visual mapping, pair up together and share your ideas by asking:

What are some of the similar and different bits of information in the maps?

We will then share the most important information in a group map.

Learning Cycles



Learning Intentions for the day:
By the end of our initial session we will have come full circle from considering the context of your present school to planning your vision for a Thinking School.

Six Starting Points for Thinking

Here are the six Starting Points for Thinking we are going to use and practice throughout this guide together to share and understand our ideas.

When you see a Starting Point Symbol, look for emphasis of this point in the content.

Reflective Questioning
high quality questioning and listening skills

Thinking Skills
explicit use of cognitive processes

Visual Mapping
the use of visual tools to map out ideas

Collaborative Networking
between us in pairs, groups, schools, and global networks

Developing Dispositions
characteristics, dispositions, and habits of mind are engaged

Structuring Environment
considering how the physical space is organize and resources used

The six Starting Points for Thinking are a synthesis of what we consider to be some of the essential starting points for developing thinking students and thinking schools. You may already use some of these strategies. While there are programs and resources for each of these areas, in this guide we are modeling the use of some of these strategies and how they work together. We also hope you will try out some of these ideas in your school.

Reflective Questioning

Reflective questioning is the use of prompts and questions to engage students in both thinking about "what" they know (factual memory) but also "how" they know (critical reflection). High quality questions guide students to think about their thinking (metacognition), dispositions that they are drawing on, and how they are collaborating with others as they are learning.

Thinking Skills

Psychologists, cognitive scientists, and educators have developed many different models and theories for defining and organizing a range of thinking skills. Often these models differentiate between "lower" and "higher" order skills. In general terms, there are fundamental cognitive processes for generating and organizing information, skills of analysis and synthesis, and processes of creativity and evaluation.

Visual Mapping

There are many different kinds of visual mapping techniques such as brainstorming webs, graphic organizers and conceptual and "systems" mapping. Usually visual mapping approaches mirror specific kinds of thinking skills or theories of learning. Some of these tools are used in isolated ways for certain tasks, some are open ended. There are also visual "languages" for school wide use.

Collaborative Networking

The techniques for cooperative learning are many and there are models for establishing collaborative groups, classrooms and schools. The research on cooperative learning in school and the need for high quality collaborative groups in the work place connect to the recent evolution of social networking through new technologies as learners engage other learners around the globe.

Developing Dispositions

Educators interested in the area of developing thinking often start by differentiating thinking "skills" such as cause-effect reasoning and the ability to make inferences from thinking "dispositions" such as persistence, remaining open-minded, and metacognition. Dispositions are often related to the new field of emotional intelligences and the developing empathy in relationship to others.

Structuring Environment

How the classroom, school, and surrounding area is physically structured has a great affect on teaching and learning. Positioning of students on the floor, seating arrangements in the classroom, and the accessibility of learning materials are all dimensions of the environment. The use of all the resources available within and around the school and wider community is key to engaging students.

2 Why a Thinking School?

- Thinking Schools?
- Mapping Ideas
- Collaborative
- Brain Matters

Visual Mapping - Why a Thinking School?

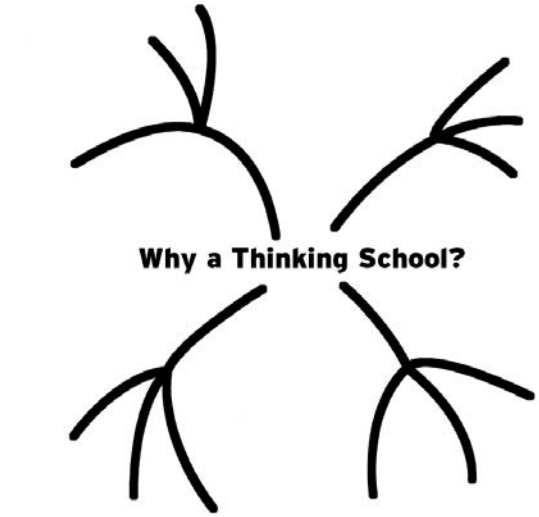
Our next step on the journey is to ask an open ended question:

Why would we want to begin to transform our school toward becoming a "thinking" school?

Create a Mind Map of your ideas in your Working Field Guide.

Create a center as shown. Then add major ideas and then details for each major idea.

Pg. 04



NOTES: Tony Buzan created the Mindmapping® techniques in the 1950's, initially for helping business people involved in advertizing to create new concepts for products.

Collaborative Networking of Ideas

FIrst

Pair with a person and show each other your maps. Look for common ideas and add new ideas from your colleague.

If you want to know more from your colleague about an idea in the Mind Maps, try this question:

> "How are you thinking about this idea? Please tell me more."

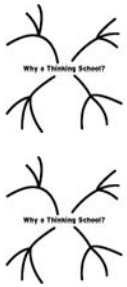
Second

Now find another pair and share your Mind Maps. As you look at the four Mind Maps ask each other this question:

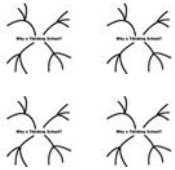
> We needed to prioritize the most common and important ideas from all of our maps. What are the 3 or 4 most important ideas? How would these 3 or 4 ideas be prioritized, from most important at the top to the bottom? Create a flow chart in your Working Field Guide.

Third

Our last step is to bring together the highest priority ideas together into a group Mind Map. This process of effectively and efficiently bringing our ideas together forms a very good starting point for your journey toward becoming a "thinking" school.



pair share



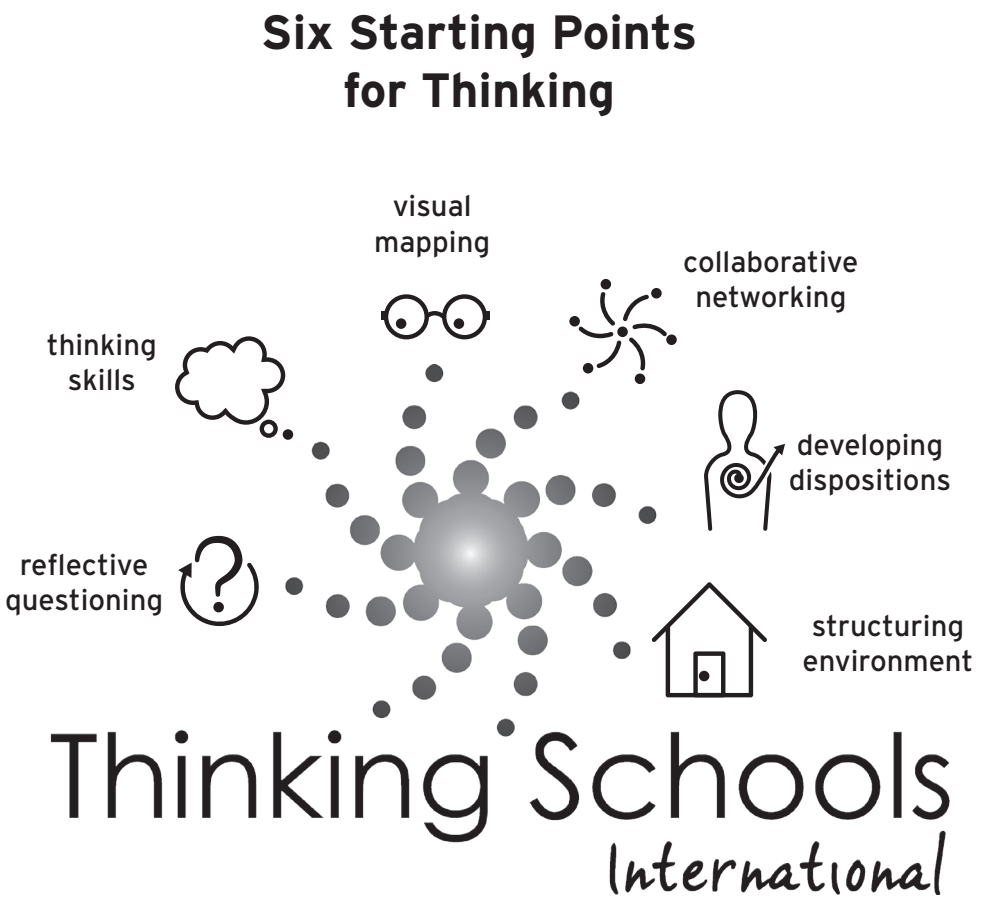
two pairs share

group share

Let's review and reflect on our process that we just used for facilitating our thinking. We used some of the six Starting Points for Thinking.

Which did we use?

How did they help you?



Brain Matters

During the previous activity we consciously used a range of strategies to engage you in thinking about why a "thinking" school would become an important focus for teaching, learning, and leading your school for years to come.

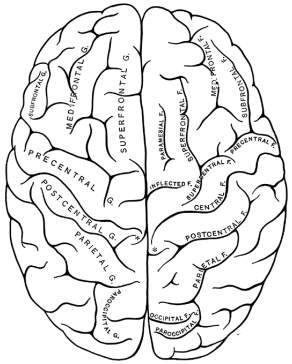
We will also focus on how brain research helps us understand how to facilitate students' thinking.

Here is a simple overview of how both sides of the brain work together.

The Learning Brain

Logical

Words
Numbers
Logic
Sequence
Writing
Reading
Math
Fine Detail



Creative

Visualization
Patterns
Images and Pictures
Perspective
Music
Art and Design
Big Picture

How did this activity engage your brain?

Step 2: Why a Thinking School?

Getting Started

3 What is the vision of Thinking Schools International?

- Envisioning
- Thinking
- For, Of, About
- Evidence
- Keys

Envisioning a Thinking School

Thinking Schools International is an expanding group of educators from around the world focused on developing, implementing, documenting, and openly sharing the practices of explicitly improving all students', teachers', and administrators' thinking abilities.

Our role is to support you in developing your own definition and vision of a "Thinking School" within your learning community and sharing your insights with our wide network of schools around the world.

Thinking About Thinking

The late Professor Emeritus Bob Burden, of the Cognitive Centre at Exeter University, England, offered this view of Thinking Schools:

Thinking Schools International

> A thinking school is one of an educational community in which all members share a common commitment to giving regular, careful thought to everything that takes place. This will involve learning how to think reflectively, critically and creatively, and to employ these skills and techniques in the co-construction of a meaningful curriculum and associated activities. Successful outcomes will be reflected in students across a wide range of abilities demonstrating independent and co-operative learning skills, high levels of achievement, and both enjoyment and satisfaction in learning. Benefits will also be shown by the ways in which all members of the community interact and show consideration for each other, and in the positive psychological well-being of both students and staff.

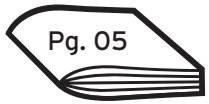
NOTE: Learn about certified Thinking Schools at www.thinkingschoolsinternational.com/thinkingschoolscriteria

For, Of and About Thinking

Dr. Art Costa, an international leader in the field of developing the "School as a Home for the Mind" offers this vision for the journey:

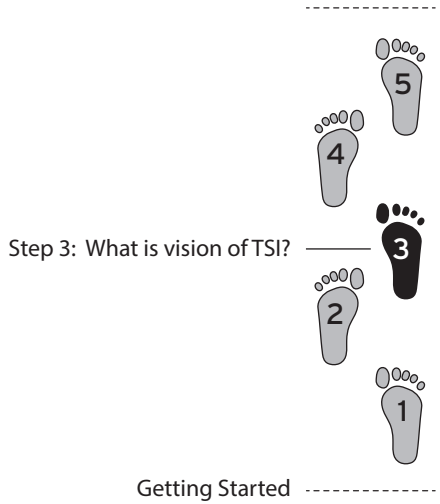
Teaching FOR Thinking
Creating school-wide and classroom conditions that support thinking development.

Teaching OF Thinking
Instructing students in the skills and strategies of thinking directly and/or implementing thinking programs.



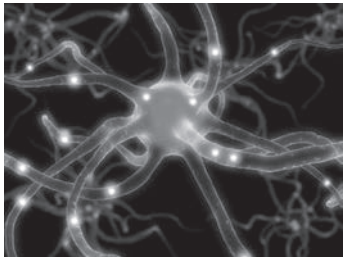
Teaching ABOUT Thinking
Helping students become aware of their own and others' thinking processes and use in real-life situations and problems

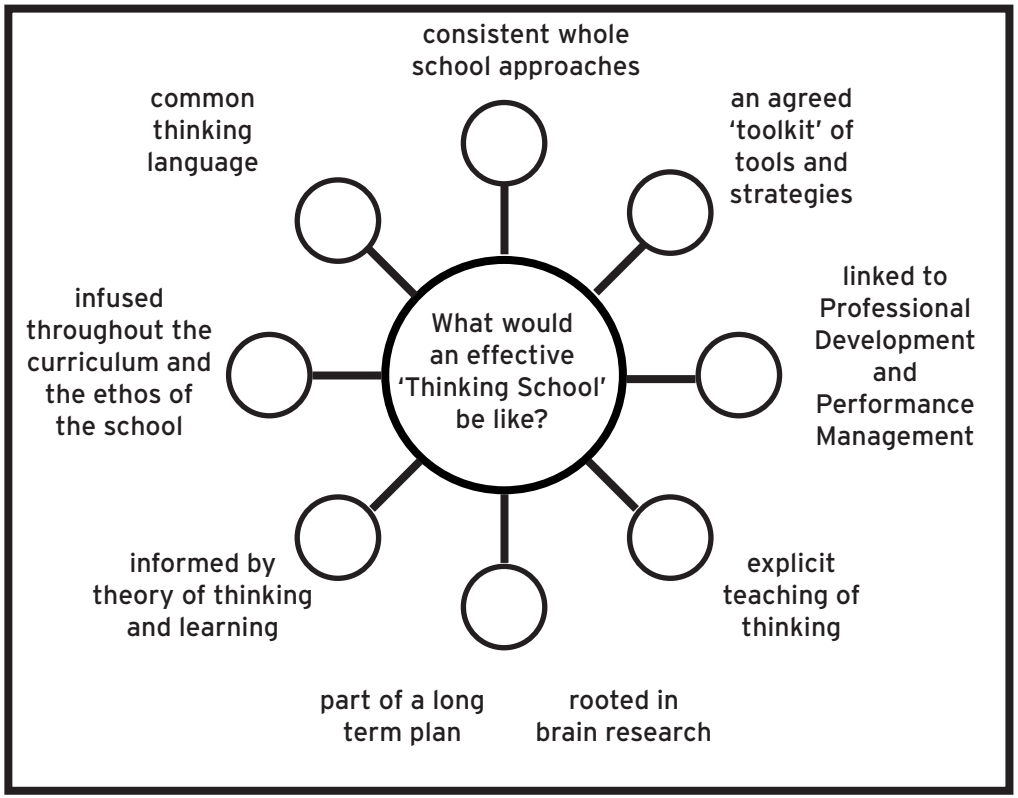
Each of these broad areas of development can happen at the same time while a focus may be on developing a sequential plan. If you had to prioritize a starting point, which teaching area would YOU start with: FOR, OF or ABOUT? What would come second and third?



For, Of and About Thinking

Over the past 20 years of accumulated evidence across whole schools, it is clear that there is a range of important elements for framing an effective Thinking School as shown in the outside rectangle. There is an intentional, explicit, and long-term commitment to a process of teaching FOR, OF, and ABOUT thinking. Here are several indicators that a school is engaged in this process that may drive the specific cluster of actions you take:



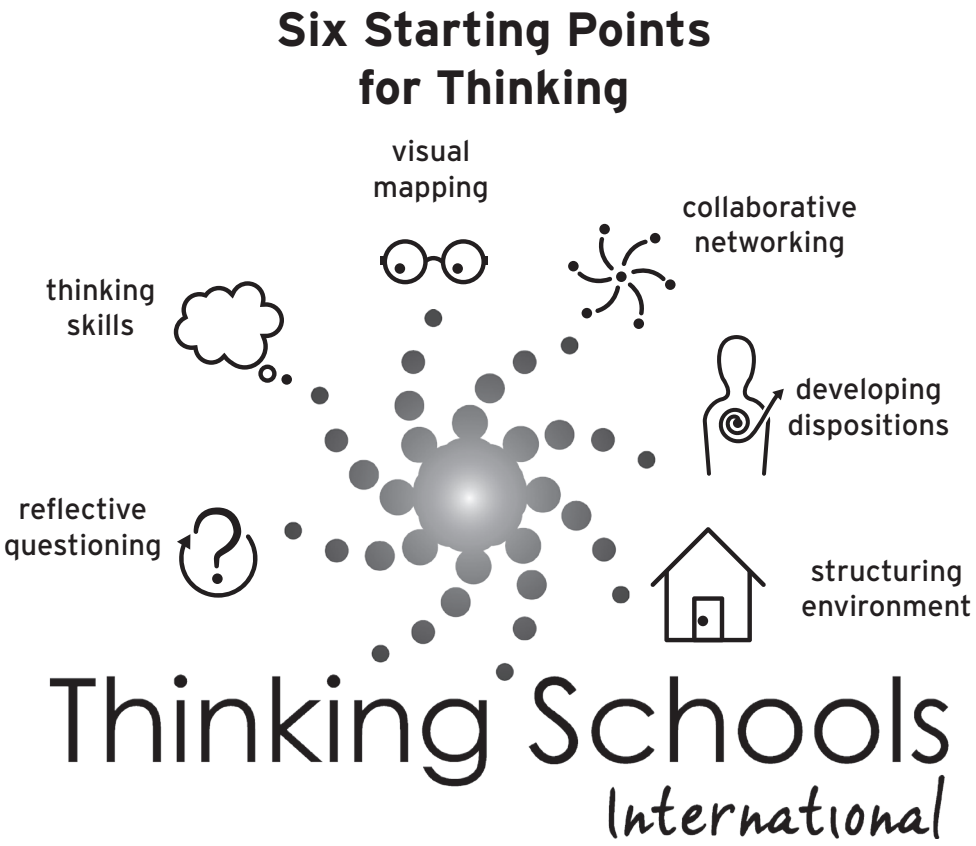


Brain Matter

Neurons connecting in the brain are the foundation for thinking and learning. Just as we have geographic maps showing roadways and subway systems, we can use visual mapping for showing the connections our brain and mind are making.

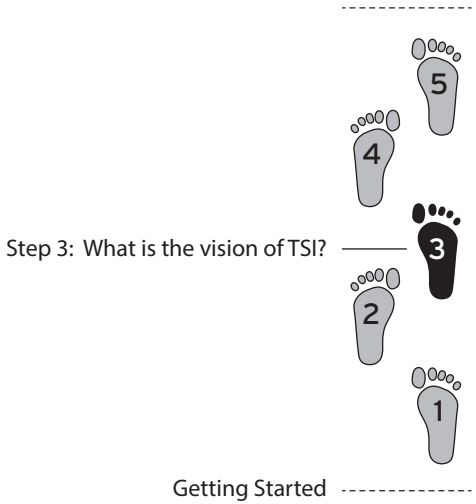
Thinking Back: Review the Six Starting Points for Thinking.

1) Which of these points did we just use as we investigated the vision of Thinking Schools?



2) How did each of these points support your thinking?

3) How would you use these points in your role in the school?



How are We Working Together?

- Characteristics
- Phases
- Process
- Whole School

Common Characteristics Across a Thinking School

Thinking Schools are built upon three principles:

- all learners have abilities within themselves to think in a variety of ways.
- creating a connection between students' thinking processes and the content we teach is critical.
- to improve thinking processes, we need student-centered active learner models.

As we work with you we will share documentation and research from the network of Thinking Schools. There is a growing number in the Thinking Schools International network and other schools around the world that have focused on thinking as a foundation for learning.

Common Characteristics of Thinking Schools

- a coherent school-wide thinking approach
- deliberately planned for
- a common thinking language
- everyone does it
- explicitly taught and reinforced over time
- infused throughout the curriculum
- adaptive as new learning takes place

Common Outcomes Across a Thinking School

Here are some of the common outcomes reported by Thinking Schools.
Improvement in:

- levels of independent learning
- academic attainment
- literacy and communication skills
- motivation to learn and think
- behavior
- attendance
- classroom management and teacher facilitation

Phases Toward Becoming a Thinking School

There are some very clear short and long terms phases that we have identified for working with Thinking Schools over time and we have begun them today. These phases cycle back as a school adapts a plan and begins implementing different approach so you may retrace your steps many times in the years ahead.

Here is a rough sketch of a pathway of development toward becoming a school community focused on thinking. We will work with you every step of the way and will connect you to others around the world on a similar journey.

PHASE 1 Decide on a transformative design intent to begin the journey toward becoming a Thinking School over the next few years.

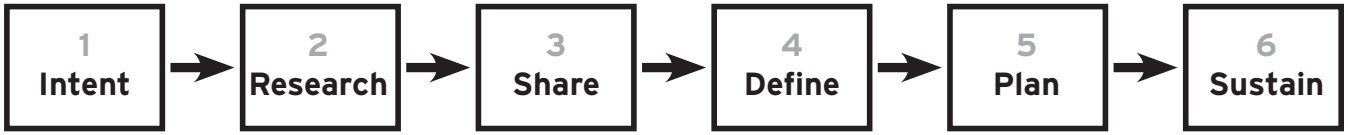
PHASE 2 Do research as a staff and make connections to processes you are already using to facilitate thinking in your school. Begin practicing some of the Starting Points in classrooms.

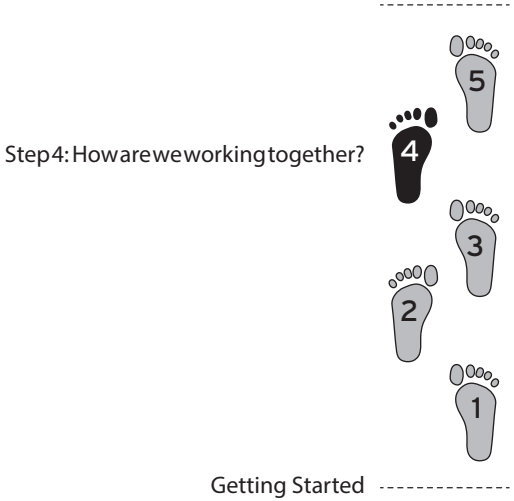
PHASE 3 Develop some shared understandings about thinking and learning. Begin by reviewing your work from today and scanning www.thinkingschoolsinternational.com for more information about other Thinking Schools around the world.

PHASE 4 Decide on the scope of a Thinking School in your context. Begin a transformative designing process with a leadership team. Design a framework and choose suitable strategies, thinking development models, and approaches/programs to use school wide.

PHASE 5 Decide on delivery methodology, training processes and timelines for the short term (this year) and long term (over multiple years).

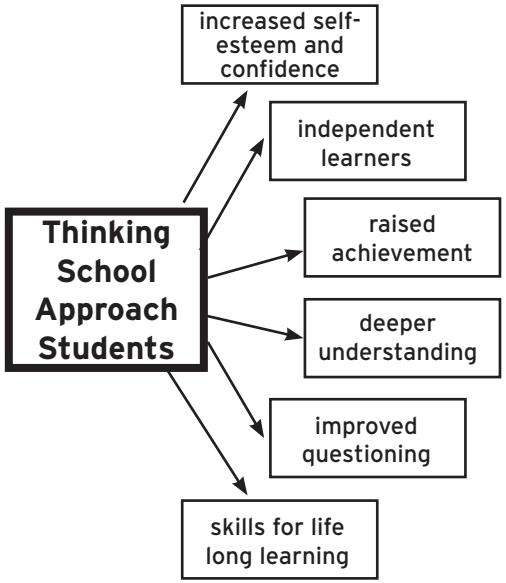
PHASE 6 Decide who and how you will manage, monitor and sustain the intiatives and how progress toward your benchmarks and goals willl be assessed.





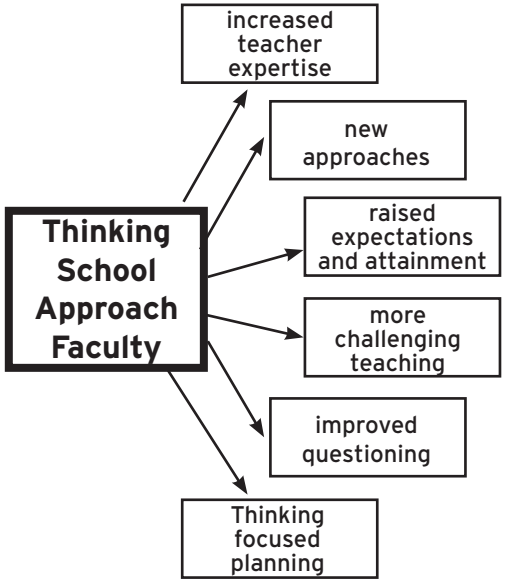
How will this process make a difference for STUDENTS?

How else could a focus on thinking make a difference for students?



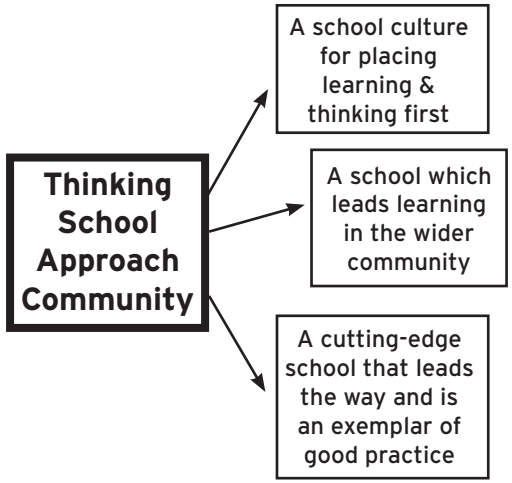
How will this process make a difference for the FACULTY and SENIOR MANAGEMENT team?

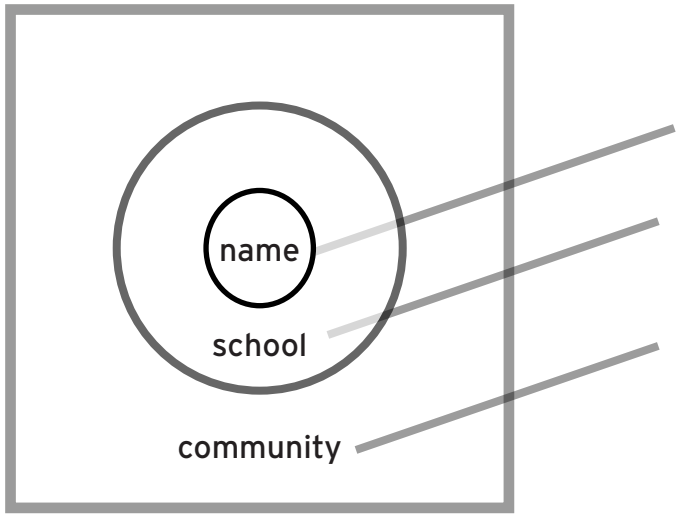
How else could a focus on thinking make a difference for the teachers and administrators?



How will this process make a difference for the WHOLE SCHOOL?

How else does a focus on thinking make a difference for the ethos of the school as a community?





What is your name and what are the things that you do in the school?

Identify as many important things that you would say about your school to someone who has never been there.

Every community has its own character. Write down the most important things about the wider neighborhood and community that surrounds your school in the Frame of Reference.

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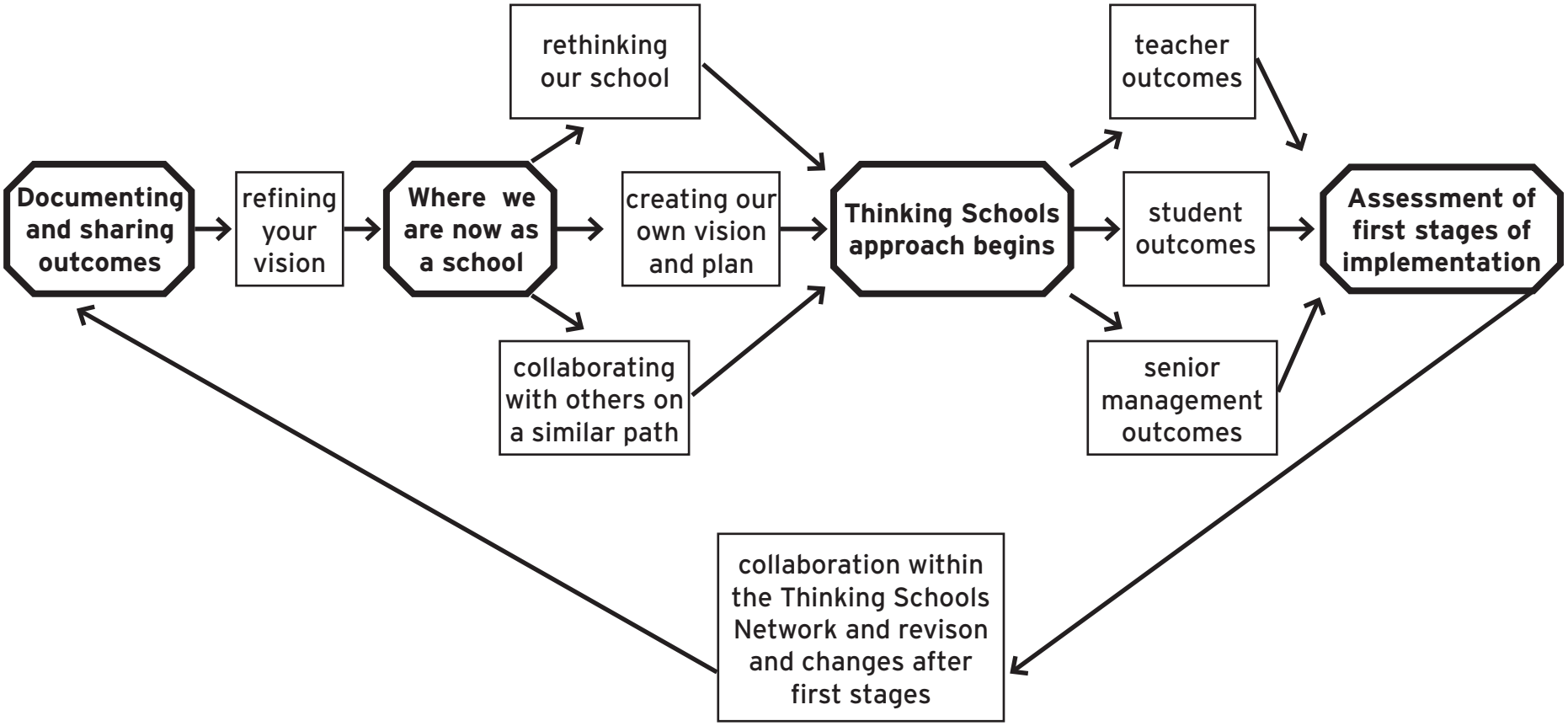
Step 4: How are we working together?
Getting Started

Thinking Back: Here is a synthesis of the last three visual maps shown in a systems diagram.

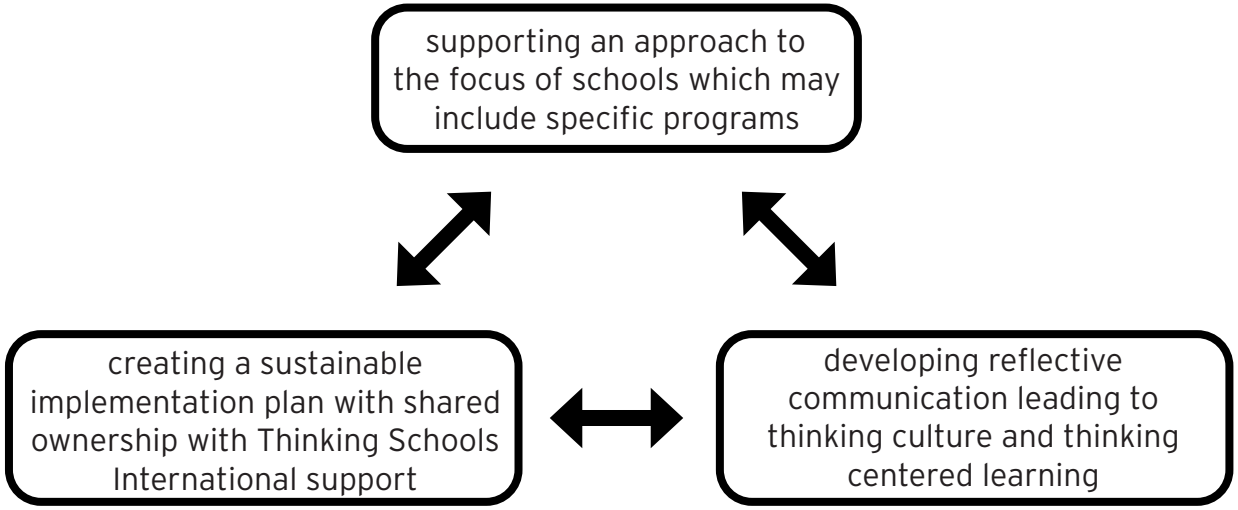


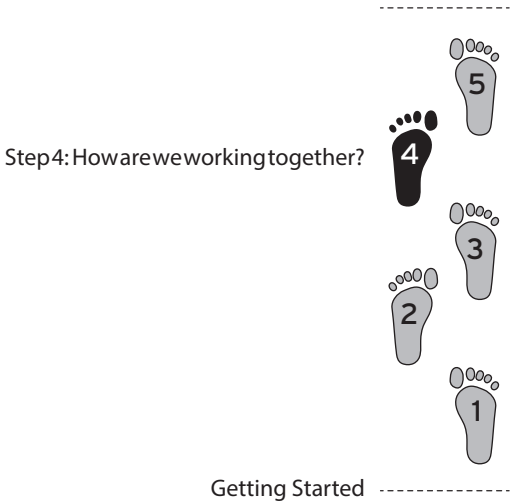
How does this visual mapping of a system help you to think?

NOTE: Systems Thinking is a field of study of how causes and effects in a system interrelate and create feedback loops. Peter Senge developed a model of 5 disciplines that is driven by how we understanding and think in systems. See: www.thinkingschoolsinternational.com/systemsthinking

Becoming a Thinking School often requires a shift in the culture or ethos of the school at every level. This does not happen immediately as the journey has many phases.

Our Goals in working with schools is a PROCESS APPROACH that may be summarized as:

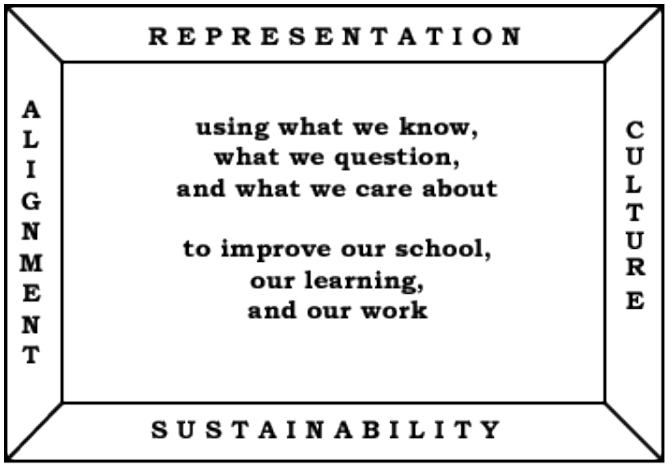




ARCS

There are several different organizational change models that have been developed over the years. One model we use—ARCS—has been developed and researched by Communities for Learning: Leading lasting change® and offers a guide for how to support sustainable school improvement.

The Communities for Learning Framework



For more information on ARCS developed by Communities for Learning: Leading lasting change®, go to:
www.thinkingschoolsinternational.com/arcs
www.communitiesforlearning.org

There are four areas of focus presented in a tree diagram with essential, reflective questions below each area.

ARCS

aligning
To what extent have we developed a vision that is shared by everyone in our school?

representation
What is the best combination of thinking and perspectives to push our thinking and work?

culture
What attitudes, behaviors and beliefs are most prevalent in the hum of everyday activities?
...in times of crisis?
...celebration?

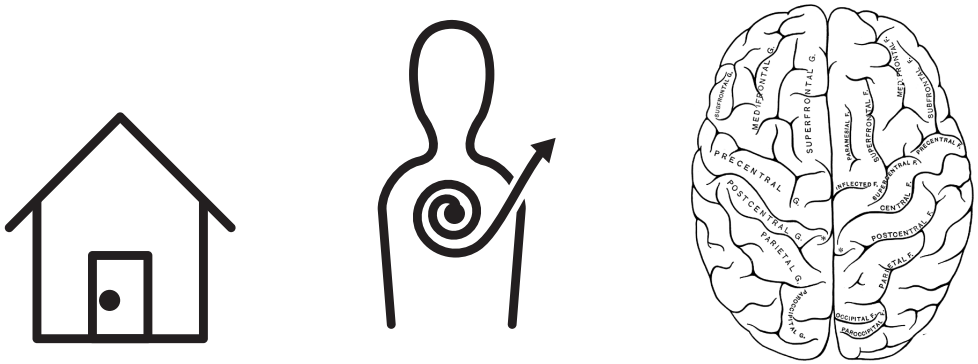
sustainability
are we thinking about how our current actions will affect tomorrow's reality?

Focused on Thinking

There are many examples of Thinking Schools and the documentation about the processes and outcomes. Thinking Schools International has worked closely with schools on their own path toward becoming a school focused on thinking. On the next three pages are excerpts created by a head teacher showing a few of the key documents from their journey.

This school created a vision and process for what they called a 'thought-full' curriculum:

- Establishing and embedding the 'thought-full' curriculum
- The transformative journey to transforming learning



the vision

2008-2009: for all teachers and students to value the concept of a 'thought-full' curriculum.

2009-2010: to transform learning by enhancing and embedding the 'thought-full' curriculum.

Step 4: How are we working together?

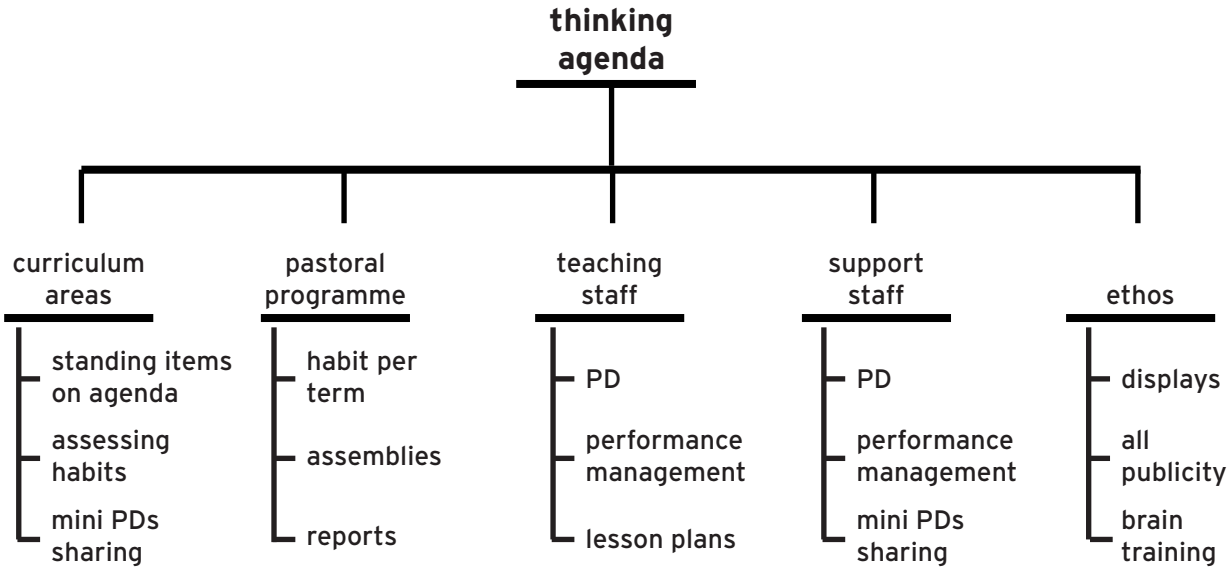
Getting Started

As part of the transformative designing process the school also identified their strategic Intent using visual mapping:

What is important in the transformational design process?

What outcome(s) are we trying to achieve in the transformational process?

The school looked at the whole school and used a tree diagram to consider where and how they were going to enhance and embed the characteristics shown below within the school culture.



Here were the documented outcomes after two years:

- improvement not just in academics, but confident individuals.
- Students becoming more independent in thought – more hitting A levels
- Students becoming more rational and analytical (metacognition)
- More enjoyable learning
- Students become more succinct, concise
- Teachers become more confident in using a variety of approaches to promote learning
- Positive, risk-taking approach – teachers talking about their lessons
- Thirst for knowledge
- Cope better after they have left the school

5 What does a "Thinking Student" look like?

- Thinking Student?
- Traditional vs. Thinking
- Learning Brain
- Reflecting

Thinking Student, Classroom and School

Before we begin to explore different pathways in the journey ahead, let's focus on the individual student using these guiding questions in a "Y" diagram.

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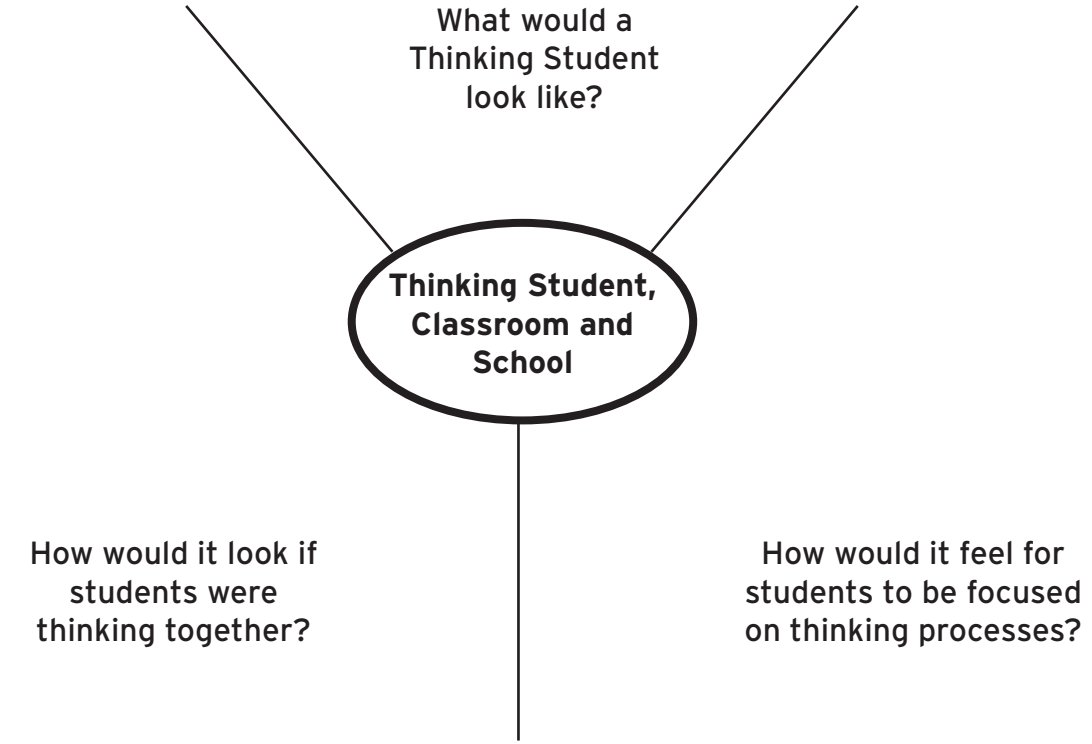
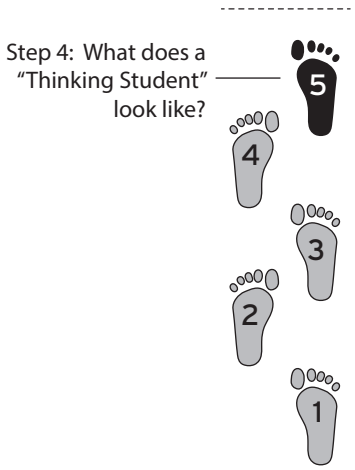


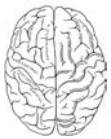
Traditional vs. Thinking

If our perceptions of students shift when focusing on the explicit development of thinking, then here are some shifts in how the curriculum from traditional to a thinking curriculum might look.

TRADITIONAL	THINKING
Questions asked by teachers are factual and closed-ended	Students independently asking a variety of questions
Teaching telling students about how well they are learning	Student recording and reflecting on their own thinking processes
Emphasis on student recall of prescribed content information	Students applying core thinking skills to constructing knowledge
Different ways of thinking remain personal and private	Students actively discuss and share different ways of thinking
Knowledge is expressed in linear speech and writing	Students use a range of learning modalities such as visual mapping
Focus on passing closed-ended exams for selection purposes	Students learn how to become self assessing and metacognitive
A belief in a singular, static Intelligence is fostered and students are perceived	Students are aware of a range of forms of multiple, dynamic intelligences that can be improved

Given the information contrasting Traditional and Thinking centered curriculum, let's consider how a more Thinking centered curriculum draws on the dynamic architecture of the brain to facilitate mindful learning. What would a student "brain" look like when the direct improvement of thinking is the focus?





Brain Matter

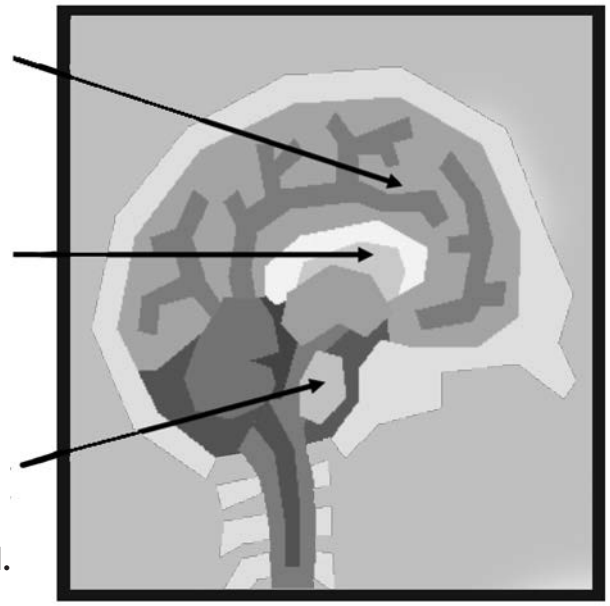
Here is a summary of the Learning Brain, each part of which we need to pay attention to as we guide learning with thinking as the key to students life long learning.

The Learning Brain

The Neo-Cortex:
This is where the higher order thinking skills such as problem solving take place. Here the brain works out patterns and meaning.

The Limbic System:
This is the seat of emotions and long term memory. We remember best when our learning has emotion and meaning.

The Reptilian Brain:
This part of the brain looks after basic survival. Under stress the Reptilian Brain blocks the Neo-Cortex and the Limbic System from thinking and remembering - learning is slowed down or prevented.



Theorists believe that the Reptilian Brain was first to develop. In a sense, every student is under emotional "pressure" and "stress" to perform and succeed and may be slowed down in classrooms where their thinking is not directly facilitated. Often, students believe that they are either "smart" or "dumb" or somewhere in between and don't believe that they can "get smarter."

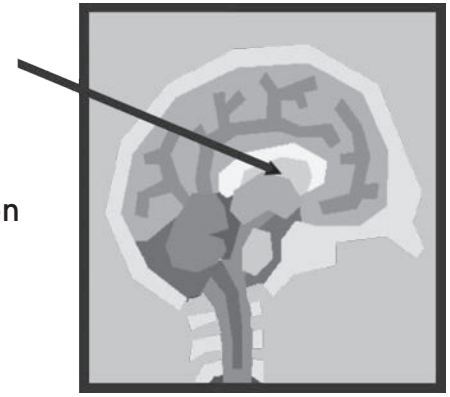
Brain Matter (cont.)

Making learning meaningful and drawing on the emotional capacities of students engages the Limbic Brain.

The Learning Brain

The Limbic Brain:
We can help to develop the limbic brain by:

- Stimulating emotions to make learning memorable
- Creating high self esteem and high expectation
- Afirming positive beliefs and values
- Explaining why learning is important and the benefits of knowing
- Encouraging strategies that embed learning into the long term memory



Return to the table contrasting Traditional and Thinking Centered Curriculum and consider how a shift supports students in their capacity for long term memory and a positive sense of one's self as a learner.

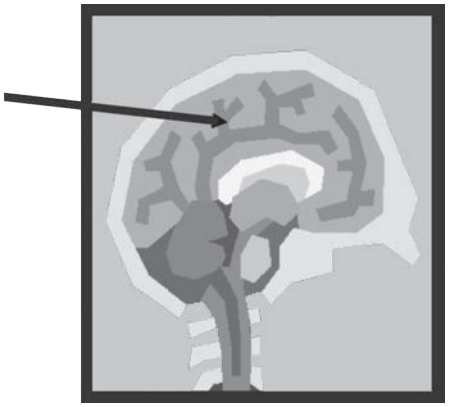
Brain Matters (cont.)

The Neo-Cortex is believed to be the most recently formed part of the human brain. This is where we as humans work out our abilities to reflect on and change our behaviors, engage in higher order problem-solving, and "learn how to learn" through reflective thinking (meta-cognition).

The Learning Brain

The Neo-Cortex
We can help to develop the neo-cortex by:

- Connecting new learning to previous learning
- Using all the senses in learning
- Encouraging problem solving
- Creating exciting learning opportunities
- Giving feedback to help children know their next steps
- Giving children oppportunities to understand how they learn



Again, look back to the contrast of Traditional and Thinking Centered Curriculum and identify connections to these details about the Neo-Cortex.

Reflecting on the First Stage of Our Journey

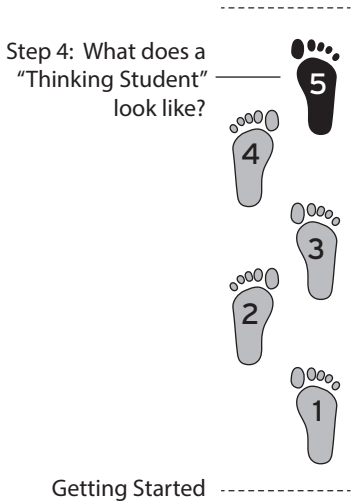
Let's review this first stage of our journey:

STAGE 1 Getting Started
- Step 1 Who are We Together?
- Step 2 Why a "Thinking" School?
- Step 3 What is the vision of a Thinking School?
- Step 4 How are we going to work together?
- Step 5 What does a "Thinking Student" look like?

Here are insights from Carol McGuiness, an educational leader in the UK, who summarizes the shift toward Thinking Schools:

> The 'knowing of knowledge' is no longer enough to succeed in the increasingly complex, fluid, and rapidly evolving world in which we live.
>
> Our society today needs young people who are flexible, creative, and proactive ~ young people who can solve problems, make decisions, think critically, communicate ideas effectively and work efficiently within teams and groups.
>
> In order to optimise life-long learning and potential success it is now widely accepted that young people need to have opportunities to develop personal capabilities and effective thinking skills as part of their well-rounded education.

Our next steps in the journey is to explore the many pathways, approaches and programs for developing a Thinking School.



Notes:

Thinking Schools International

STAGE 2 EXPLORING PATHWAYS

Step 6 How does "change" happen?

Step 7 What are some basic pathways to Thinking?

Step 8 How can we explore these pathways to Thinking?

Step 9 How do assess where we are?

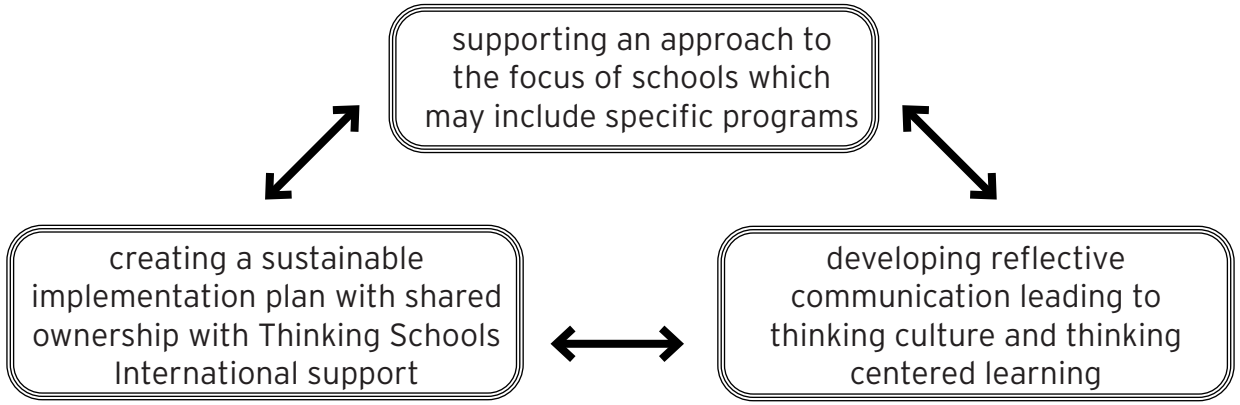
Step 10 At this stage of the journey, what are your priorities?

6 How does "change" happen?

- Different Approaches
- Orders of Change
- Examples

Different Approaches for Growing a Thinking School

This stage of the journey focuses on an investigation of a range of different dimensions and approaches for growing a Thinking School from the inside out. As shown in our overview in Step 1, it is important for you to have access to information about general and specific pathways for this process:

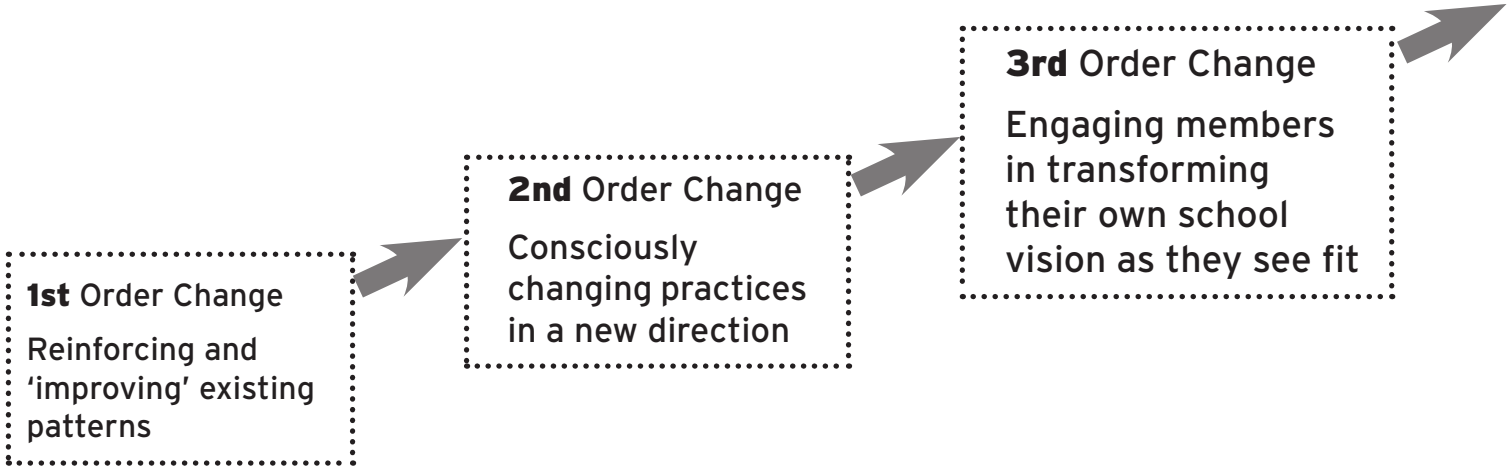


Why is this important? If you are creating a transformative design for growing a Thinking School then you will want to draw from a range of dimensions and approaches in order to make changes happen in a systematic way.

Before looking at these different dimensions, approaches and programs for developing thinking, it is also important to step back and view a larger question: How does Change Happen?

Orders of Change

How does Change Happen? The research on "change" processes in any organization can be summarized using this sequence. Each of these levels of change is important and useful:



Schools improve student performance through new teaching techniques.
(1st Order Change)

Some schools decide to make significant changes and receive support from outside "change agents" who guide them to implement a new program or approach to teaching.
(2nd Order Change)

Some schools engage in the process of taking control of their own change processes – from the inside out – by envisioning a new approach or framework for their own school.
(3rd Order Change)

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From the Inside Out: 3rd Order Change for Growing Thinking Schools

Two early examples that we have learned from come from schools in New Zealand and United Kingdom. St. Cuthberts and Burraton schools embarked on becoming in their own ways, Thinking Schools, from the inside out. Several more recent international examples of Thinking Schools we are learning from follow the two earlier examples. These examples show us how schools can engage in 3rd Order change, and also offer us clear lessons for growing thinking schools.

United Kingdom • Burraton School

2004. Our school was interested in active learning techniques. We set off to explore a range of thinking tools, including Mind Maps, Thinking Hats and Brain Gym.

March 2006. We attended a course offered by Kestrel Consulting focused on thinking skills and Thinking Schools, and this "confirmed for us that thinking skills could be the link to bring it all together."

September 2006. After using Thinking Maps during the course in March, we decided that this approach would be a good starting point and most useful for the whole school.

November 2006. We invited Professor Bob Burden of Exeter University to visit Burraton and we discussed how we could measure the impact of Thinking Maps. We later used Burden's "Myself as a Learner" Scale and along with teacher observations we wrote up an impact study that showed positive results.

February, 2007. David Hyerle, Ed.D., the developer of Thinking Maps, visited our school and worked with the children and modeled the use of the maps for our teachers. I decided to become a Thinking Maps trainer myself and this has proved very useful.

2008 to present. We have since moved forward with the introduction of Costa's Habits of Mind for developing dispositions and attitudes about thinking and learning. We are also using Bloom's Taxonomy as well as "educational drama" as integrated dimensions of our focus as a Thinking School.

Throughout this time we have received on-going support from Kestrel who provide expertise through their team of experienced consultants/trainers. They work closely with the Centre for Cognitive Education at Exeter University and we have gained recognition from the university as a Thinking School. We have worked hard to ensure our parents are on board and have run a number of workshops for them. They are intrigued and very supportive of our approach.

New Zealand • St. Cuthberts K-12 School

As described by Gill Hubble, Assistant Head Teacher at St. Cuthberts, the school embarked on their own process of refocusing their school on thinking. They went through three major phases of development as described by Gill:

PHASE 1: Discovering Too Many Possibilities
At first, teachers and senior managers spread out to investigate and try out a very wide range of approaches and strategies for teaching "for, of, and about thinking." While this was exciting, it also did not systematically impact students abilities to transfer these strategies to daily learning.

PHASE 2: Focus on Transfer
The next phase involved refining the focus to a more select few strategies drawn from several different approaches. Teachers across the school agreed to focus on these strategies for helping students to learn in traditional ways but also by consciously using focused strategies for thinking. The results were good, but there was no coherent approach for developing "A Home for the Mind" (Costa).

PHASE 3: Uniting the School with a Common Language
In the final phase, the school decided that they would focus on only two approaches to thinking, one focused on cognitive processes and the other on developing dispositions. The two models became the foundation for the school over many years.

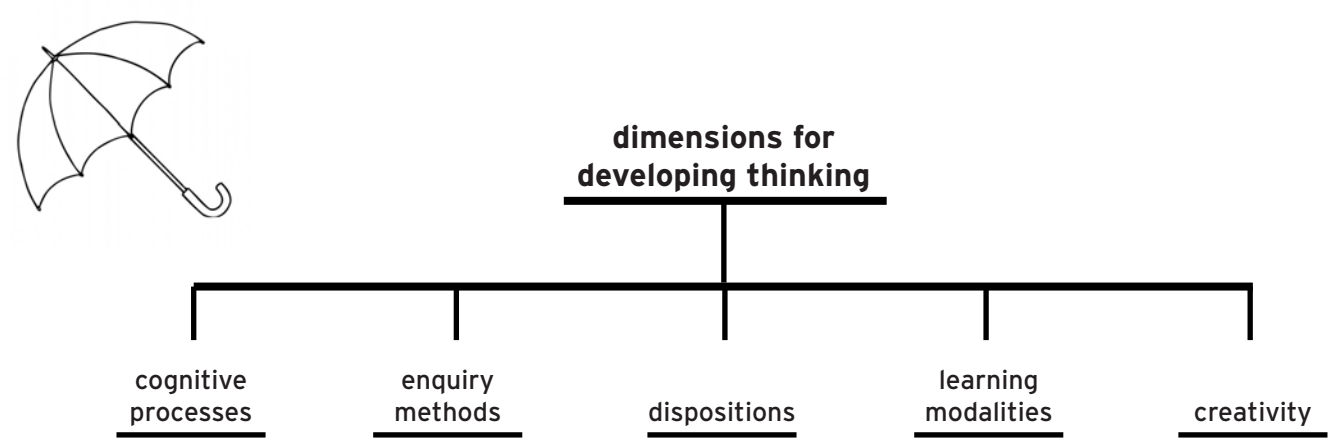
Go to Thinking Schools International website to see how schools are developing in United Kingdom, Norway, Ethiopia, United States and other global locations.

7 What are some basic pathways to Thinking?

- Dimensions of Thinking
- 5 Pathways
- Jigsaw

Pathways: Dimensions of Thinking

In this stage of Exploring Pathways, we are going to investigate areas or dimensions of thinking. There are so many ways of framing and categorizing different types of thinking. You may even feel that there are different visual ways of showing the interrelationship between each of these dimensions. What is missing? You may develop your own view of the dimensions of thinking and add to or revise this tree diagram, an umbrella for developing a Thinking School:



NOTE: For a comprehensive view of the research on thinking, we strongly suggest that you look at the latest edition of Dr. Art Costa's Developing Minds (ASCD).
Link to: www.thinkingschoolsinternational.com/developingminds

Pathways: Dimensions of Thinking

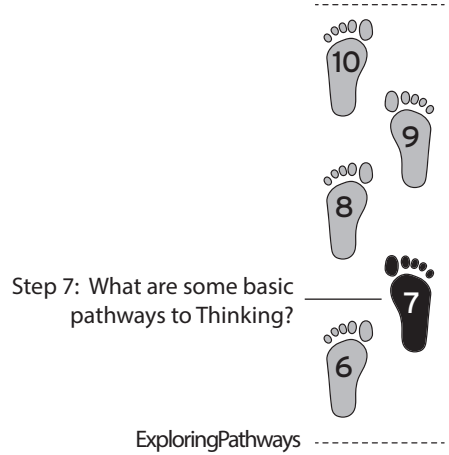
Cognitive Processes
There are many different models of cognition, starting long ago with Jean Piaget's identification of mental operations such as comparison, categorization, cause-effect reasoning. Benjamin Bloom's taxonomy of cognitive objectives includes areas such as comprehension, analysis, and synthesis.

Enquiry Methods
Methods of enquiry often engage deep questioning techniques, Problem-Based Learning®, decision making, cooperative learning and use of the scientific method. Mathew Lippman's Philosophy for Children® program is one example of how to integrate critical thinking, questioning and Socratic processes applied to important issues.

Dispositions
The development and mediation of the "character" of thinkers is a focus of Reuven Feuerstein's approach "Instrumental Enrichment." Art Costa's Habits of Mind® model includes dispositions such as persistence, flexibility, and metacognition. Howard Gardner's "multiple intelligences" offers a range in how learners represent their thinking.

Learning Modalities
Learning modalities commonly focus on visual, auditory, and kinesthetic learning. One area is the field of visual tools and David Hyerle's language of Thinking Maps®. Learning "styles" models describe global-analytic and abstract-concrete ways of learning.

Creativity
Directly facilitating creativity engages students' open ended, innovative, and expressive thinking. Many techniques for focusing on flexible, creative thinking have been developed. Some models are Edward de Bono's Lateral Thinking® and Six Hats Thinking® and Tony Ryan's Thinker's Keys® for problem solving within and across disciplines.

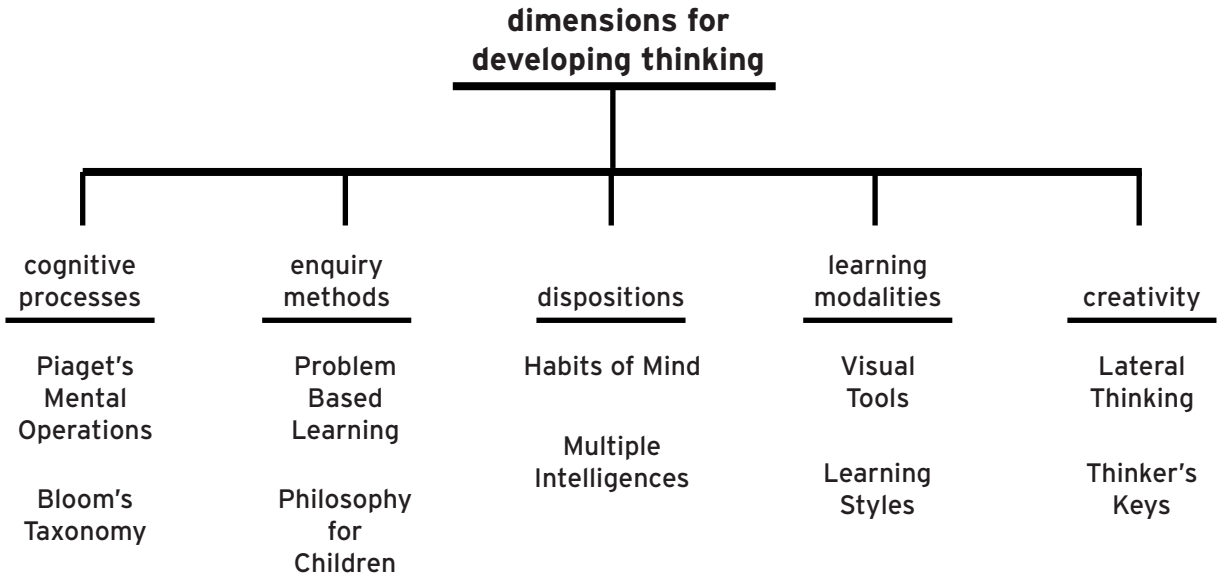


Dimensions of Thinking

Here is an expanded tree diagram of the summary. As you review the summaries and view the diagram, consider these reflective questions:

What would you add to this visual map?

What would you change?

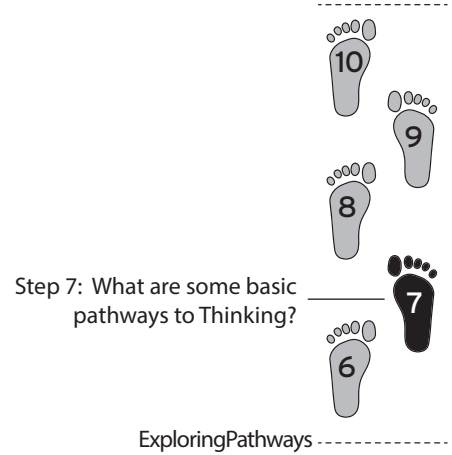


Jigsaw Process

For each of the five dimensions of thinking in the tree diagram we will now investigate these areas and network ideas using the Jigsaw Process.

Here are the steps:

1. Organize into HOME GROUPS with 5 people in each group.
2. Select one person to become responsible for finding out about only one of the five dimensions.
3. New STUDY GROUPS are formed based on the five dimensions. (If there are large groups, just split into 2 groups or 3 groups, etc.)
4. Each STUDY GROUP reviews the 4 pages of documents in the following sections related to the dimension they are finding out about.
5. Finally, each person returns to their initial HOME GROUP and tells the group about their discoveries and insights.



When you form your study group, here are the simple guidelines:

1. Quietly review the four pages for each dimension.
2. Then discuss the information that you believe is important to take back to your HOME GROUP.
3. Have a conversation about what you find interesting or intriguing about this dimension.
4. Use a visual map to show your information.

Dimensions for Developing Thinking

For each of the five dimensions that you are reviewing in your STUDY GROUP we will focus on only one model within the dimension. Here is the overview:

A **Cognitive Processes Dimension**
Focus: The New Bloom's Taxonomy

B **Enquiry Dimension**
Focus: Questioning

C **Dispositions Dimension**
Focus: Habits of Mind

D **Learning Styles Dimension**
Focus: Visual Tools

E **Creativity Dimension**
Focus: Thinkers Keys

Each of these sections has four pages that have a common sequence:

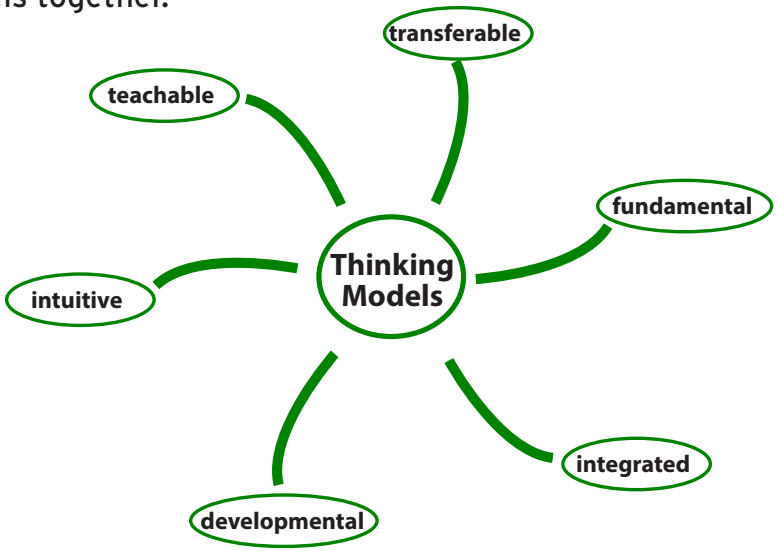
- Overview: Summary of the Dimension and introduction to the model used as an example.
- Explanation: A closer look at the model and the implications for use in a Thinking School.
- Learning Applications: Ideas about applications and use with different age groups.
- Reflective Questions: Questions you can use to review the content of this section and use when you return to your home group.

What is a Thinking Model?

The term model is often used in education to define a well thought out, coherent set of processes for application and transfer to learning. Models are practical! There are writing models, problem-solving models, and even the basics of the scientific method. But there are very few models for thinking. Models are not always developed with strict directions for exactly how to use them, because the highest-quality models are not rigid, linear, procedural guides. If a model is not flexible, it becomes lifeless and is not transferrable. As we discuss in more detail in the following section, just identifying specific skill-sets, or listing processes, or even defining a coherent collection of dispositions does not a model make. The schools we have worked with have found that when students are introduced to too many skills, or dispositions, or long step-by-step instructions atone time, they do not become fluent with their own thinking. Thinking Schools pathways and models for classroom use include:

- Visual Tools for Thinking pathway using the Thinking Maps® model
- Dispositions for Mindfulness pathwayusing the Open Mind model
- Questioning for Inquirypathway using the Reflective Action Process model

Over time students can become fluent with these models. And, maybe even more importantly, students begin to use these models together.



Thinking Models

Models Are Fundamental: Each model is based on the most basic processes of thinking. For example, the Thinking Maps® model is based on cognitive skills and processes that are used everyday in classrooms. The eight cognitive processes underlying the visual Thinking Maps® are derived from cognitive science research: human beings categorize, sequence, compare, see relationships, identify characteristics of things using our senses, etc.

Models Are Integrated: Thinking models show how the identified processes are used together. For example, each of the Thinking Maps® can easily be drawn and used together visually on a page or across multiple pages.

Models Are Developmental: The models developed are adaptable for simple or complex applications. To continue with Thinking Maps as the example, each of the basic graphic elements may be easily expanded depending on the context of learning, and the learner. One of the patterns, called a Tree Map for classifying information, can be as simple as categorizing three forms of water, or as complex as the taxonomy of all living creatures!

Models Are Intuitive: It is essential that a student-centered model for thinking makes sense to teachers and students alike within a relatively short period of time. There are many complex models that, while rich and detailed, never become used with fluency because the pieces or processes are idiosyncratic and do not represent how our minds work in real time. This is a key testing ground that teachers immediately understand: How can I teach a model to students if it doesn't seem natural and, to a certain degree, obvious?

Models Are Teachable: A student-centered model for thinking needs to be easy for students to access and understand. Teachers need to be able to present a model's processes in a clear and defined manner so that all students can master them quickly. For example, students can easily draw the cognitive patterns for each of the eight Thinking Maps® using only lines, shapes, and arrows

Models Are Transferable: Students need to be able to use each model in their lives. Models are most useful when they can be used for interdisciplinary applications as well as within a single discipline. Each of the student-centered models for thinking can be used outside of school and in students' everyday experiences, college, the workplace, and for personal decision-making. Thinking Maps® are designed so that any person of any age can draw out their thinking in almost any context. You may think of additional characteristics of effective models. Owr time, as entire students and faculty become fluent with each model.

Section A

Cognitive Processes Dimension

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

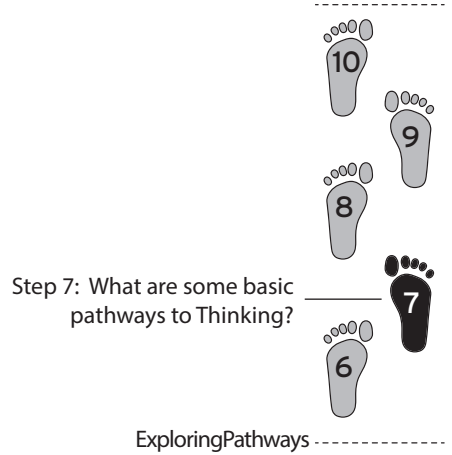
Benjamin Bloom developed the taxonomy in the 1950s in the United States. It is a hierarchy of six types of thinking which become increasingly complex and demanding.

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 Lorin 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.

ORIGINAL BLOOM	REVISED BY ANDERSON
EVALUATION	CREATING
SYNTHESIS	EVALUATING
ANALYSIS	ANALYZING
APPLICATION	APPLYING
COMPREHENSION	UNDERSTANDING
KNOWLEDGE	REMEMBERING



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Section A • Cognitive Processes Dimension

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

Below is the expanded view of the revised taxonomy. Here you can see that these different cognitive process categories work across different types of knowledge: factual, conceptual, procedural and metacognitive (reflective).

The Cognitive Process Dimension

The Knowledge Dimension	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
A. Factual Knowledge						
B. Conceptual Knowledge						
C. Procedural Knowlege						
D. Meta-Cognitive Knowledge						

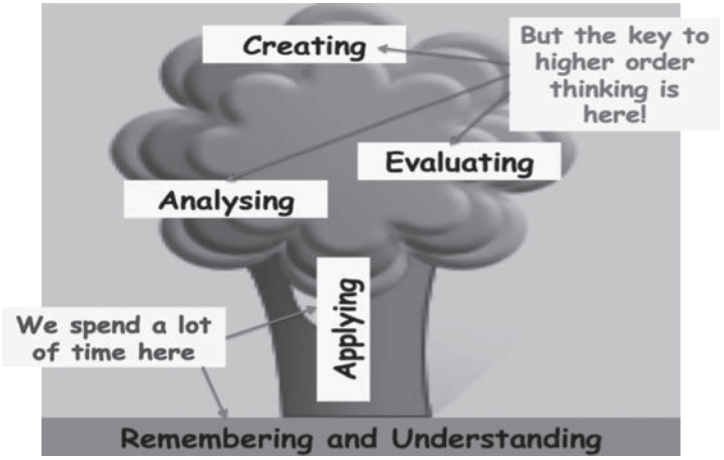
Educators use this grid to understand how macro cognitive process such as "analysis" are used for the different types of knowledge. For example, in a science experiment where the focus is on "analysis" the student would:

analyze by categorizing the factual information
analyze by showing the causes-effect concepts
analyze by sequencing alternative procedures
analyze by discussing different cognitive processes used (metacognitive)

Section A • Cognitive Processes Dimension

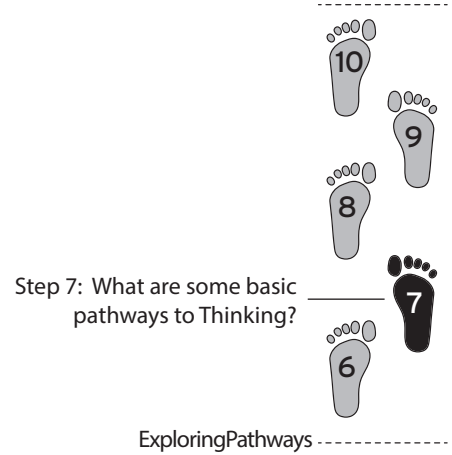
Benjamin Bloom's Taxonomy of Educational Objectives (Cognitive Domain)

Here is a pictoral view of the revised taxonomy that you can share with your students before you introduce any activity. You can have students draw the tree and add the terms as you work through the activity or unit of study.



For example, before you read a story, have students draw the tree and write the words "remembering" and "understanding" as the roots or ground. As your students read the story, ask them to remember details and discuss the plot of the story. Then ask students to "apply" this knowledge by comparing the details or plot to another story they have recently read. Next, have them analyze the causes and effects of the actions taken by a central character. Follow this up with an evaluation discussion by students discussing why they believe that a certain character was, for example, "good" or "bad" , by reflecting on the values that each student believes is important. Finally, have students create an alternative ending to the story, or change factual information within the story so that it changes how a character develops.

During and after this sequence within the taxonomy, have students write the key terms on their tree and have a discussion about the processes and how they use these cognitive processes in other subject areas.



Section A • Cognitive Processes Dimension

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

Reflective Questions

When you return to you HOME GROUP, you will have some time to discuss the information and ideas on the past three pages. Here are some reflective questions to discuss right now that will support you when you return to your HOME GROUP:

1. What are only one or two key points from the overview page that you think everyone should know about Bloom's Taxonomy? What would you add to these few summary pages on levels of thinking?

2. What was something you learned that you have never heard about before and that interested you in these pages?

3. Why do you think Bloom's Taxonomy may be important in your classroom or school?

4. How do you see that introducing all teachers and students to the revised Bloom's Taxonomy would support the journey toward growing a Thinking School?

REMEMBER: When you return to your HOME GROUP make sure that you refer directly to the three pages in this section!

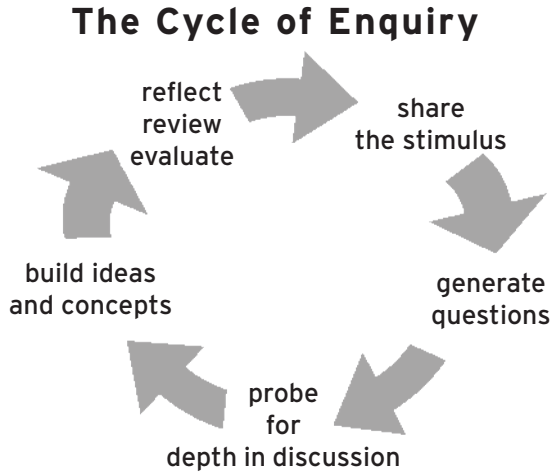
Section B

Enquiry Dimension

Questioning

When classrooms become enquiring communities they are extending a long, philosophical tradition for thinking together, exploring new possibilities, and bringing together a collective wisdom about an idea or concept. There are programs, such as Philosophy for Children, developed by Matthew Lippman that refine these processes at every level.

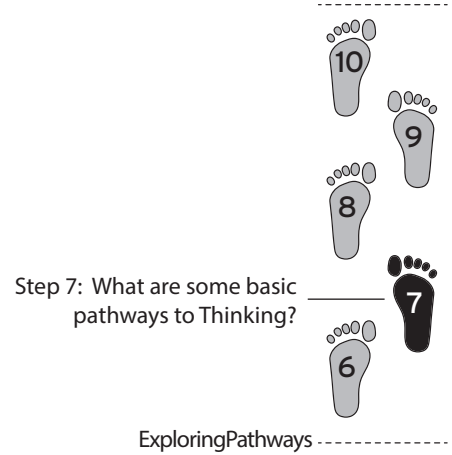
Here is a basic view of the enquiry dimension of thinking that shows that enquiry processes cycle back upon themselves as new knowledge is surfaced.



A key focus of creating enquiring classrooms is the use of questioning. In growing a Thinking School, it is clear that we need to move from factual remembering of information (see Bloom's Taxonomy) to more creative and metacognitive questions that reinforce content learning and promote deeper knowledge and problem-posing in students. Research shows overwhelmingly that:

- Teachers use memory questions in over 70% of their teaching time;
- Teachers overemphasise fact questions in tests and exams;
- Questions in textbooks are predominantly memory or fact questions.

Karron G Lewis ~ Center for Teaching Effectiveness, University of Texas



Section B • Enquiry Dimension • Questioning

Here are some ways that enquiry is supported by questioning techniques:

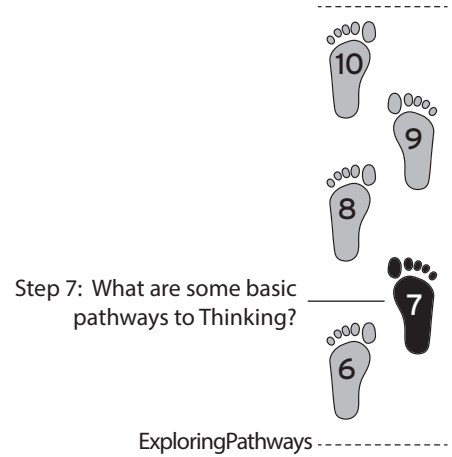
Classroom Culture of Enquiry	Questioning
Students explore and develop their own views and the beliefs and values of others.	Invite students to ask their own questions.
Learn to be clear in their thinking and make responsible judgements.	Give students "wait time" or "time to think" in response to your questions.
Learn to be more thoughtful by basing decisions and actions on reasons.	Ask students questions that support them in thinking through their reasoning.
Make links between matters of personal concern (friendship, fairness, growing up, love and more general philosophical issues) change, personal identity, free will, truth.	Engage students in questioning how their own lives are concretely related to abstract ideas.
Learn to listen and respect each other, developing self esteem and self confidence.	Give students time to practice asking high quality questions and listening with openness.

Section B • Enquiry Dimension • Questioning

Many educators use Bloom's taxonomy as a framework for asking questions and developing a culture of enquiry in their classroom. One level of cognition is the process of remembering, but this does not mean simply rote recall of disconnected facts. Notice how these verbs, question stems, and learning activities engage students in making patterns of information.

Remembering

Useful Verbs	Sample Question Stems	Potential activities and products
tell	What happened after...?	Make a list of the main events.
list	How many...?	Make a timeline of events.
describe	Who was it that...?	Make a facts chart.
relate	Can you name the...?	List all the ... in the story.
locate	Who spoke to you...?	Make a chart showing...
write	Can you tell why...?	Write a list of any pieces of
find	Find the meaning of...?	information you can remember.
state		



Another level of cognition is the process of evaluating ideas and this means offering questions to students that engage them in stepping back from a problem or idea, establishing criteria and making reasoned judgments. Questions of evaluation also lead to students having to offer alternative solutions and not simply "criticizing" another point of view.

Evaluating

Useful Verbs	Sample Question Stems	Potential activities and products
judge	Is there a better solution to...?	Prepare a list of criteria to judge a ... show.
select	Judge the value of...	Conduct a debate about an issue of special interest.
choose	Can you defend your position about...?	Make a booklet about 5 rules you see as important.
decide	How would you have handled...?	Convince others.
justify	Do you believe?	
debate		
verify		
argue		

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Reflective Questions

When you return to you HOME GROUP, you will have some time to discuss the information and ideas on the past three pages. Here are some reflective questions to discuss right now that will support you when you return to your HOME GROUP:

1. What are only one or two key points from the overview page that you think everyone should know about Enquiry and Questioning? What would you add to these few summary pages on Questioning?

2. What was something you learned that you have never heard about before and that interested you in these pages?

3. Why do you think a range of different types of questions may be important in your classroom or school?

4. How do you see that by introducing all teachers and students to the high quality questioning would support the journey toward growing a Thinking School?

REMEMBER: When you return to your HOME GROUP make sure that you refer directly to the three pages in this section!

Section C

Dispositions Dimension

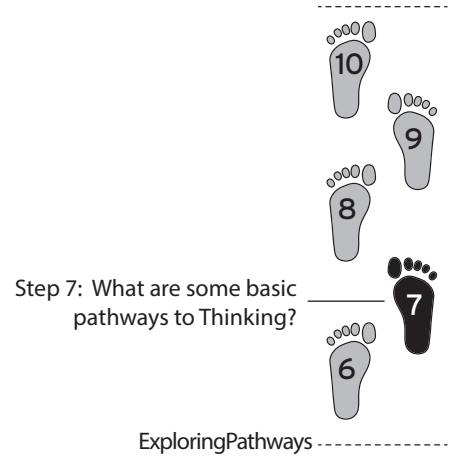
Developing "dispositions" may be understood as part of the "affective domain" and also as essential threads woven through the tapestry of a Thinking School. Habits of Mind and Multiple Intelligences are two models that offer different views of Dispositions of Thinking.

Multiple Intelligences

The conceptual model of Multiple Intelligences developed by Howard Gardner has been used over the past twenty years to challenge a singular view of static iintelligence which has been based on verbal, logical-deductive and mathematical thinking. Within each intelligence, Gardner shows that different dispositions, ways of learning, and specialized talents are represented:

Multiple Intelligences

• Linguistic	Word Smart
• Logical and Mathematical	Logic Smart
• Musical	Music Smart
• Visual spatial	Picture Smart
• Kinesthetic	Body Smart
• Naturalist	Nature Smart
• Interpersonal	People Smart
• Intrapersonal	Self Smart



Educators, as well as philosophers and psychologists, have always understood that the focus on a range of behaviors is essential. "Intelligent behaviors" are grounded in how we think, feel and react in the context of learning, problem solving and decision making.

Reuven Feuerstein, a protégé of Jean Piaget, long ago began focusing on improving behaviors that decrease impulsivity, engage persistence, and promote flexibility. He uses the direct and systematic mediation of a learner's cognitive processes, intelligences, and behaviors and is embodied in a comprehensive program for individual students called Instrumental Enrichment.

Section C • Dispositions Dimension • Habits of Mind

Habits of Mind ... are the characteristics of what intelligent people do when they are confronted with problems, the resolutions to which are not immediately apparent. A Habit of Mind is a pattern of intellectual behaviours that leads to productive actions. It is a composite of many skills, attitudes, cues, past experiences and proclivities. These Habits of Mind are often used together in clusters of behaviors and used in various situations. Art Costa and Bena Kallick developed a model of 16 Habits designed for use within classrooms and across whole school communities.

1. **Persisting**: Stick to it! Persevering in task through to completion; remaining focused.

2. **Managing Impulsivity**: Take your time! Thinking before acting; remaining calm thoughtful and deliberative.

3. **Listening with understanding and empathy**: Understand others! Devoting mental energy to another person's thoughts and ideas; step back from one's own thoughts in order to perceive another's point of view and emotion.

4. **Thinking flexibly**: Look at it another way! Being able to change perspectives, generate alternatives, consider options.

5. **Thinking about your Thinking (Metacognition)**: Know your knowing! Being aware of ones own thoughts, strategies, feelings and actions and their effects on others.

6. **Striving for accuracy and precision**: Check it again! A desire for exactness, fidelity and craftmanship.

7. **Questioning and Problem Posing**: How do you know? Having a questioning attitude; knowing what data are needed and developing questioning strategies to produce those data. Finding problems to solve.

8. **Applying past knowledge to novel situations**: Use what you learn! Accessing prior knowledge; transferring knowledge beyond the situation in which it was learned.

Section C • Dispositions Dimension • Habits of Mind

9. **Thinking and Communicating with clarity and precisio**n: Be clear! Striving for accurate communication in both written and oral form; avoiding over generalizations, distortions and deletions.

10. **Gathering Data through all Senses**: Use your natural pathways! Gathering data through all the sensory pathways-gustatory, olfactory, tactile, kinesthetic, auditory and visual.

11. **Creating, imagining and innovating**: Try a different way! Generating new and novel ideas, fluency and originality.

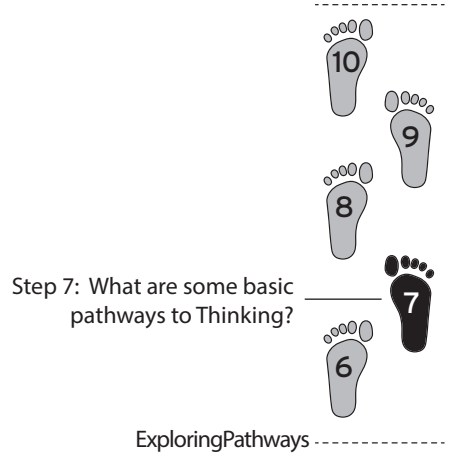
12. **Responding with Wonderment and awe**: Have fun figuring it out! Finding the world awesome, mysterious and being intrigued with phenomena and beauty.

13. **Taking Responsible Risks**: Venture out! Being adventuresome; living on the edge of one's competence.

14. **Finding Humour**: Laugh a little! Finding the whimsical, incongruous and unexpected. Being able to laugh at oneself.

15. **Thinking Interdependently**: Work together! Being able to work in and learn from others in reciprocal situations.

16. **Remaining Open to Continuous Learning**: Learn from experiences! Having humility and pride when admitting we don't know; resisting complacency.



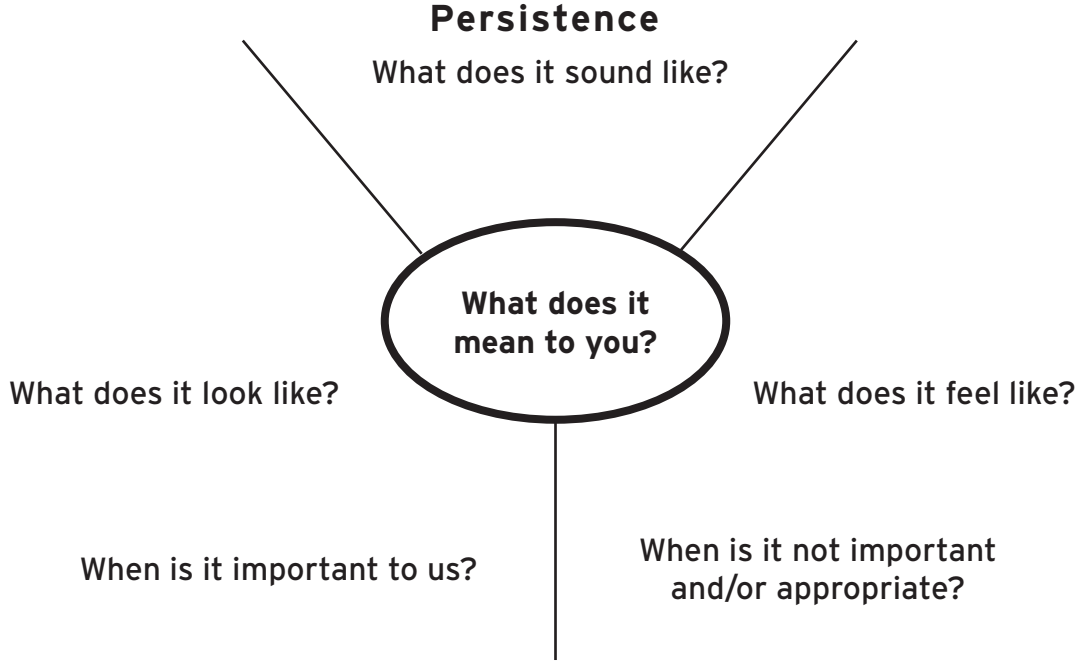
For a comprehensive information on Habits of Mind go to:
www.thinkingschoolsinternational.com/habitsofmind

Section C • Dispositions Dimension • Habits of Mind

Costa and Kallick offer a summary of evidence of intelligent learning behaviours by students while learning:

- The ability to choose a pattern of intelligent behaviour strategies
- Being capable of using them
- Knowing when to use them
- Being inclined to employ them
- Being committed to using them

Consider a key Habit of Mind, persistence, that many students need continuous support in developing. Take a moment and think about what Persistence means to you and when, what and how this Habit of Mind applies to the classroom.



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Costa and Kallick suggest that the 16 Habits of Mind become a language in classrooms. How would you make this happen across the school?

Section C • Dispositions Dimension • Habits of Mind

Reflective Questions

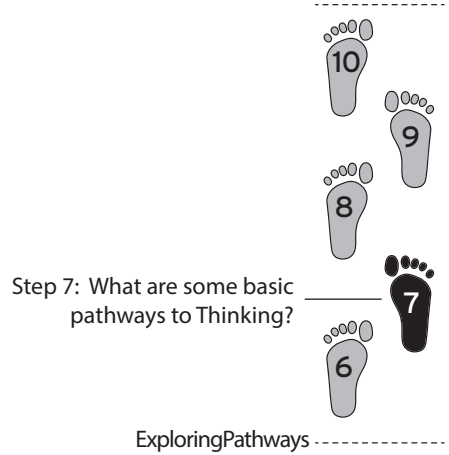
When you return to you HOME GROUP, you will have some time to discuss the information and ideas on the past three pages. Here are some reflective questions to discuss right now that will support you when you return to your HOME GROUP:

1. What are only one or two key points from the overview pages that you think everyone should know about Dispositions and the 16 Habits of Mind? What would you add to these few summary pages on questioning?

2. What was something you learned that you have never heard about before and that interested you in these pages?

3. Why do you think a range of different types of Habits of Mind may be important in your classroom or school?

4. How do you see that by introducing all teachers and students to Habits of Mind would support the journey toward growing a Thinking School?



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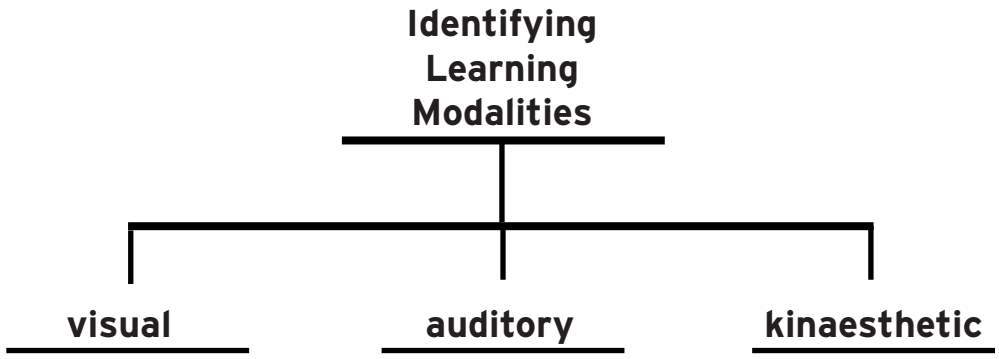
Section D

Learning Modalities Dimension
Visual Tools

There seems to be as many learning modalities as there are unique, individual learners in different classrooms, cultures, and countries. Educators and psychologists have different ways of describing learning modalities which also are called learning modalities. Some also use the definitions having to do with "cognitive modalities" across a range of abstract to concrete, and global to detail oriented ways of learning.

It is very important to recognize that every student has a complex array of "degrees" of capacity in every learning style. Student should not be categorized as being an "abstract" learner, "auditory" learner, or "global" learner, as if this is how the student should be taught. In addition, the key is for learners to improve their capacities to use the full range of learning modalities much like students improve a range of Habits of Mind and Multiple Intelligences.

A common way of describing learning modalities is by identifying as students as having a range of strength as visual, auditory, and kinesthetic learners.



Section D • Learning Modalities Dimension • Visual Tools

Visual

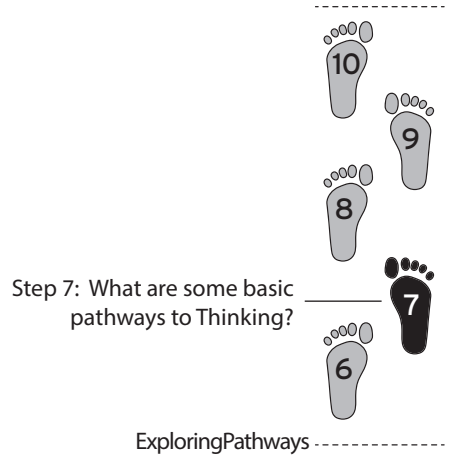
- show a preference for art
- can remember details of physical layout
- have a good memory for faces
- prefer to look at diagrams for instructions
- may enjoy watching television
- describe landmarks when giving directions
- spell words by visualising what they look like

Auditory

- enjoy discussion and debates
- enjoy listening to stories
- enjoy music
- have a good memory for names
- prefer to read written instructions
- give verbal directions
- remember the words to songs
- spell words by thinking about what they sound like

Kinaesthetic

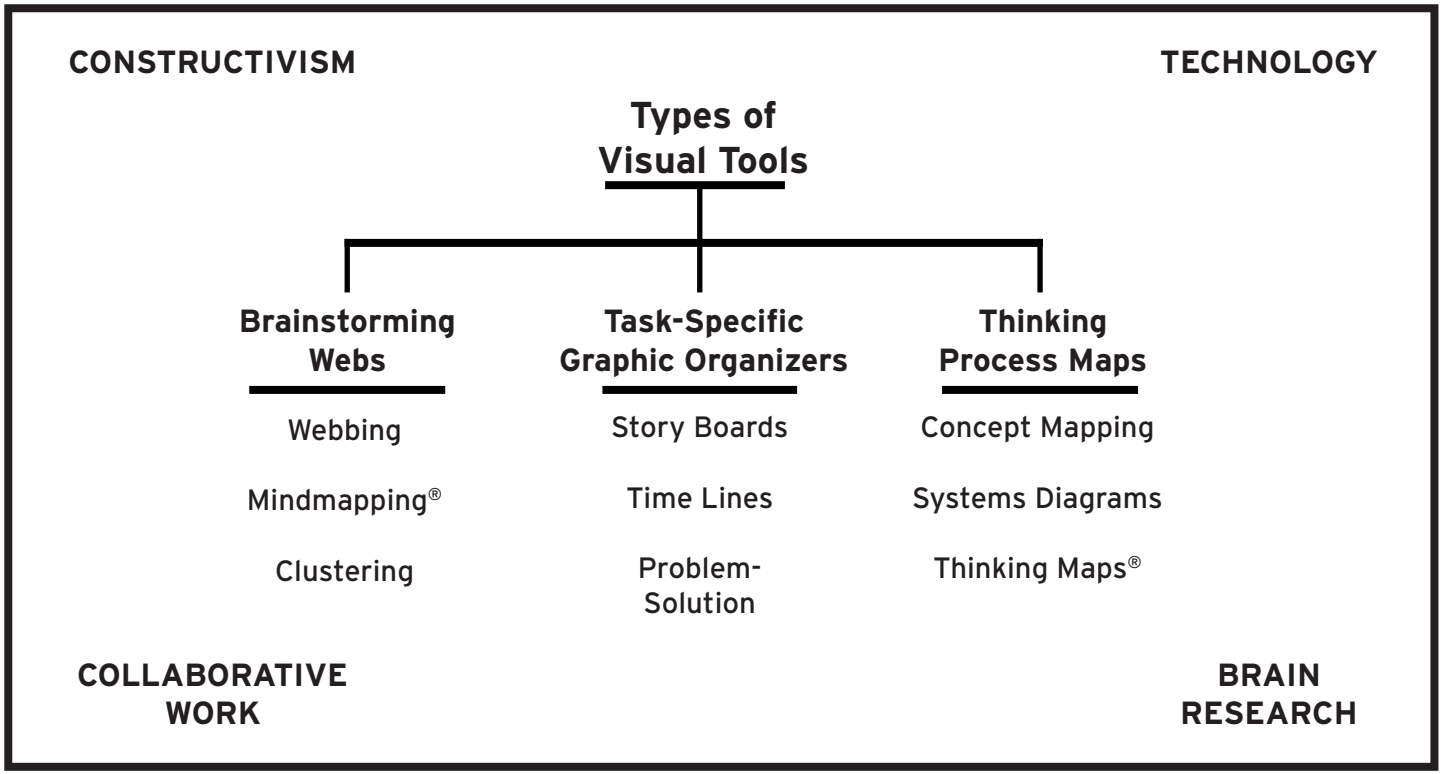
- enjoy practical and physical activities
- like to participate rather than observe
- like to have time targets
- prefer to work things out for themselves
- learn through using 3D equipment and construction sets
- draw maps to give directions
- spell words by writing them out



Section D • Learning Modalities Dimension • Visual Tools

Many educators now recognize that over the years classrooms have been dominated by the teaching and learning style based on auditory communication. Recent brain research shows that approximately 75% of the information that our brain receives comes through the eyes. With increasingly complex and networked digital processes much more information is being presented using visual formats. In many ways our world has shifted from auditory to visual learning processes.

David Hyerle has conducted research on different types of visual tools, or visual mapping as we call them in this guide. Here is a tree diagram of these three types with examples within each category:

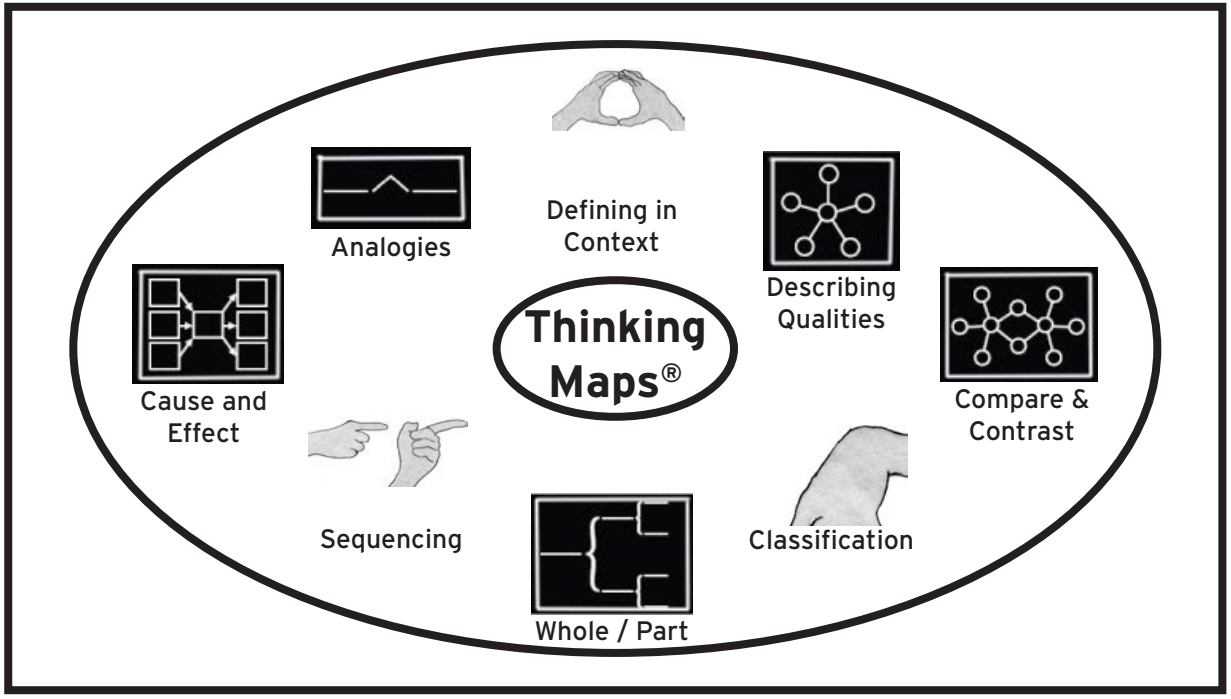


Notice that Hyerle's representation of visual tools is framed by brain research, collaborative work, more constructive learning contexts, and the power of new technologies that rely on visual representations.

Section D • Learning Modalities Dimension • Visual Tools

The three different types of visual tools are based on a range of outcomes: brainstorming webs for creativity, task-specific "graphic organizers" for more analytical, prescribed work, and thinking processes maps for explicit development of thinking abilities.

Below is the Thinking Maps® model developed by David Hyerle. As shown, each map is related to a specific cognitive process such as sequencing, categorization, an analogies. Students learn how to draw and rapidly expand each Thinking Maps and use the maps together as a language for learning. Since 1990, Thinking Maps® have been implemented across whole learning communities.



Think about the learning that goes on in the classrooms in your school. How could these cognitive processes be used in visual form to support teaching and learning? How do the Thinking Maps® also support verbal (auditory) and active (kinesthetic) styles of learning?

Learn more about Thinking Maps® at www.thinkingmaps.com
Research on Thinking Maps at www.thinkingfoundation.org

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Reflective Questions

When you return to you HOME GROUP, you will have some time to discuss the information and ideas on the past three pages. Here are some reflective questions to discuss right now that will support you when you return to your HOME GROUP:

1. What are only one or two key points from the overview pages that you think everyone should know about Learning Styles and visual tools? What would you add to these few summary pages on the use of visual tools?

2. What was something you learned that you have never heard about before and that interested you in these pages?

3. Why do you think a range of different cognitive processes represented in the use of Thinking Maps may be important in your classroom or school?

4. How do you see that introducing all teachers and students to different types of visual mapping (e.g. Thinking Maps) would support the journey toward growing a Thinking School?

REMEMBER: When you return to your HOME GROUP make sure that you refer directly to the three pages in this section!

Section E

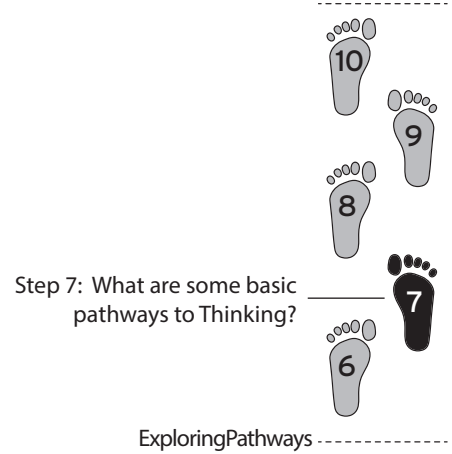
Creativity Dimension
Thinkers Key

How can you define, teach or even assess creativity? Some people may believe that the terms "creativity" and "thinking" are on opposite sides of a spectrum, but it seems that the most significant learning embodies the capacities to think creatively about any subject matter, idea, or concept.

Through history "The Arts" have been understood as the domain of those who are "creative" and refine their talents in areas such as music, writing, painting, and dance. Educators in recent times have begun to engage creativity in every discipline and have developed tools for facilitating students' openmindedness, innovation, and invention. Creative problem solving is often the focus within and across disciplines. Creativity across a Thinking School may include key dispositions such as Imagining, Generating, Inventing, and Taking Risks for Learning:

- Seek out questions to explore and problems to solve.
- Experiment with ideas and questions.
- Make new connections between ideas/information.
- Learn from and value other people's ideas.
- Make ideas real by experimenting with different designs, actions and outcomes.
- Value the unexpected or surprising.
- See opportunities in mistakes and failure.
- Take risks for learning.

Edward de Bono has developed several different techniques for developing creative thinking starting with the Lateral Thinking approach and most recently with his 6 Hats Thinking model representing: optimism/positives, information and data gathering, critique/ judgment, gut-intuition, creative alternatives, and facilitator/rule keeper.



Section E • Creativity Dimension • Thinkers Key

Thinker's Keys

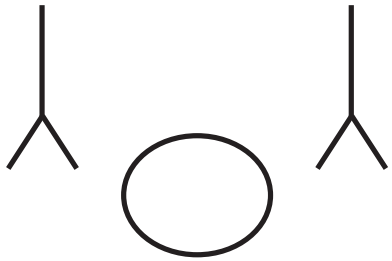
Thinker's Keys are a set of 20 different activities designed to motivate and engage learners in a wide range of creative thinking tasks. Ryan encourages pupils (and adults) to:

- Look at things differently
- Think divergently
- Think creatively
- Brainstorm ideas
- Listen to others' ideas
- Share their ideas

Here are Ryan's 20 Thinker's Keys

The Reverse	The Picture	The Inventions
The What if...?	The Prediction	The Brick Wall
The Disadvantages	The Different Uses	The Construction
The Combination	The Ridiculous	The Forced Relationships
The BAR	The Commonality	The Alternative
The Alphabet	The Question	The Interpretation
The Variations	The Brainstorming	

Thinker's Key: The Picture.
Draw a simple diagram and ask pupils to work out ways to link it (by finishing the picture) to a specific topic, theme, book, etc Use shapes below as a starting point to draw a dinosaur.



Creativity in Action

Creativity happens from seeing and doing from both 'inside the box' and 'outside the box': the ability to discern ideas and patterns, then having the ability to shape new pathways that incorporate both the 'inside' and 'outside' aspects.

The model:

Generative
Open minded inquiry into the 'idea'

Pattern Seeking
Observing
Identifying
Reflecting

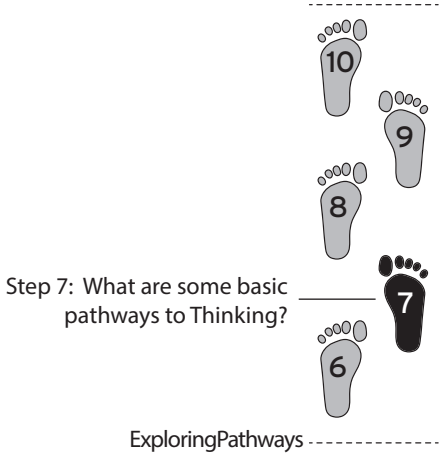
New Forms
create new unique forms one step at a time

The Musician Example:

Generative
Experimenting with musical instruments

Pattern Seeking
Observing musicians; trying patterns; reflecting on outcomes

New Forms
creating new patterns, sounds, and compositions



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Reflective Questions

When you return to you HOME GROUP, you will have some time to discuss the information and ideas on the past three pages. Here are some reflective questions to discuss right now that will support you when you return to your HOME GROUP:

1. What are only one or two key points from the overview pages that you think everyone should know about the Creativity Dimension and the range of ideas and techniques you reviewed? What would you add to these few summary pages on the use of visual tools?

2. What was something you learned that you have never heard about before and that interested you in these pages?

3. Why do you think a range of different creative thinking processes represented in the use of Thinking Maps may be important in your classroom or school?

4. How do you see that introducing all teachers and students to different types of creative techniques would support the journey toward growing a Thinking School?

REMEMBER: When you return to your HOME GROUP make sure that you refer directly to the three pages in this section!

Reflective Questions about all Dimensions

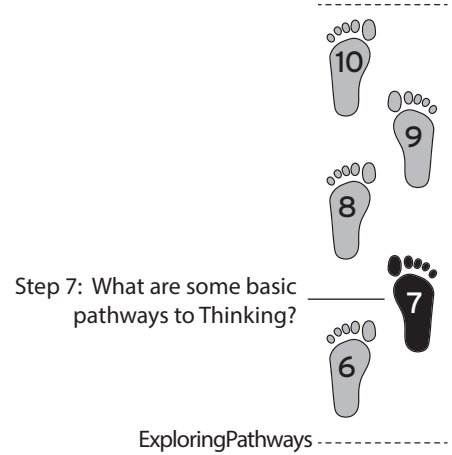
Here are some Reflective Questions to use in your HOME GROUPS to use after each of the five members introduces their dimension. These questions progress:

1. Which of these dimensions and specific approaches do you know about and/or use in your classroom as a teacher?

2. Which of these general dimensions are you most interested in finding out about?

3. To what degree are your students aware of these dimensions of thinking, and use some of the techniques independent of your direct instruction?

4. To what degree do you and your colleagues use and develop any of these dimensions across your school?



Depth and Complexity

Here is a model that provides depth of thinking for all five dimensions. The following process is effectively used as part of the six key Starting Points: reflective questioning, thinking skills, visual mapping, collaborative networking, developing dispositions and structuring environment.

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

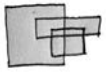
Recognizing Trends
note factors that cause events to occur (social, political, economic, geographic); identify patterns of change over time

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

Reflective Questions
use questions to: identify unclear ideas or missing information; discuss areas yet to be explored or proven; 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

Depth and Complexity - Sandra Kaplan, Ed.D., USC Rossier School of Education

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How can you explore these pathways to Thinking?

- Inductive Tower
- Five Dimensions
- Brain Matters

Inductive Tower

Now that you have had a chance to review different pathways to growing a Thinking School let's reflect on what you found. You have reviewed five different dimensions, several models (or programs) that support each dimension, and strategies within each model directed at practical applications.

Our work right now will help you to begin to look for the overlap across these dimensions, models, and strategies. We will again use the Think-Pair-Share process for developing your ideas from the ground up (inductively). Let's bring this review process together into a synthesis by using what is called an "inductive tower."

The inductive tower was developed by John Clarke of University of Vermont, USA, as a simple way to help learners of all ages summarize their thinking and create an umbrella concept.

The Inductive Tower is included in the Visual Tools program developed by David Hyerle as an example of a strategy for developing conceptual thinking.

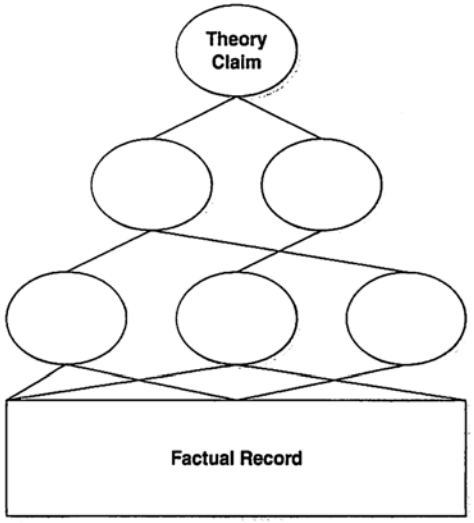
This page is excerpted from a professional book: "Visual Tools for Transforming Information into Knowledge" by David Hyerle, Ed.D. (Corwin Press/Sage Press 2009)

Step 8: How can you explore these pathways to Thinking?

ExploringPathways

Inductive Tower

Background The inductive tower was developed by John Clarke, Professor of Education at the University of Vermont. The tower is based on inductive, hierarchical reasoning. Students are often asked to develop details about a topic starting with a main idea at the top of a map. This thinking-process map provides a tool for building categories or groups of ideas from an array of information at the bottom of the maps. Students then build the tower upward to the top. With each grouping at different levels of the map, students are constructing more inclusive and abstract concepts. At the top of the map is a generalization or category heading that represents the multiple levels of facts and inductively created concepts.



Basic Techniques

- Begin by collecting basic factual information or a detailed record at the bottom of the tower.
- Identify and connect facts that you believe go together to create a concept and write a phrase or statement in a circle.
- Continue to create and link synthesis concepts and work up to the top of the tower, where you write in an umbrella statement that represents the whole tower.

Novice
is able to collect basic facts about a topic and group some of these together into new ideas and a main idea at the top.

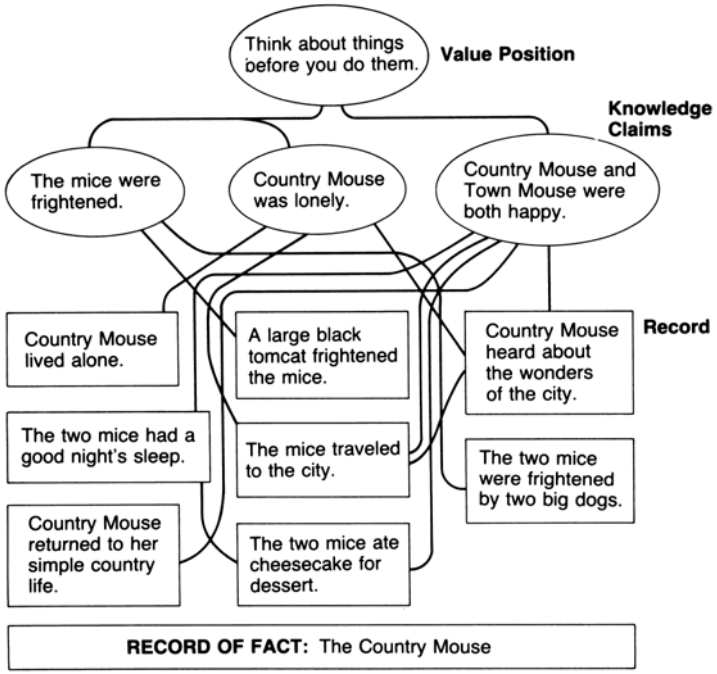
Apprentice
is able to complete a tower by adding and deleting information when making higher concepts.

Practitioner
is able to work in co-operative groups by synthesizing multiple towers into a clear statement at the top.

Expert
is able to assess a tower by evaluating the theory statement by comparing multiple towers.

Inductive Tower - Student Example

Here is an example of student work using an Inductive Tower developed by 9 year old students.



Notice how in this context the students expanded the rectangular box to put together the factual record in smaller boxes. They then identified three ideas (what John Clarke calls "knowledge claims") and then a statement about the overarching, main idea or "value position" that represents the information and concepts below.

You can see that there are different ways of drawing an Inductive Tower, but it always goes from the bottom to the top of the tower.

Here are the steps for building this tower of ideas from the ground up for bringing together a synthesis of our overview.

Scan & Think! the Five Dimensions

Take a few minutes and scan all of the pages from the 5 Dimensions and think about what you consider to be important information, ideas, and insights. Make a note of these ideas on a piece of paper.

FIRST LEVEL: With a partner, write down what you two consider to be some of the most important ideas you have about "thinking" within the box. Draw these ideas from what you have seen from the previous pages AND from your experiences.

SECOND LEVEL: Review your box of ideas. Begin to look for how some of the ideas go together into groups. Draw three or four ovals above the box as shown on the previous page. Now, group ideas that seem to go together in each oval. Don't worry if your thinking is still open ended!

Review the ideas in each oval and ask your partner: What does this group of ideas represent? How could we name this group? What is the main concept for each oval?

THIRD LEVEL: Now consider that you want to bring together these three or four or five groups together into just two or maybe three major ideas. Draw two or maybe three ovals above what you have build so far and draw the connections to the groups below.

FOURTH LEVEL: Look over the concepts that you have developed. How do they all come together? Write a phrase or sentence at the top of the tower that will be an umbrella idea, or concept that represents the whole tower!

SHARE: Now share your Inductive Tower with another pair of concept builders! What is similar? Actively add information to your tower and consider how you might change the structure of your ideas.

Could you imagine bringing together on one page all of the inductive towers you have created? These inductive towers are very important for your thinking about the journey toward a Thinking School and our next steps!

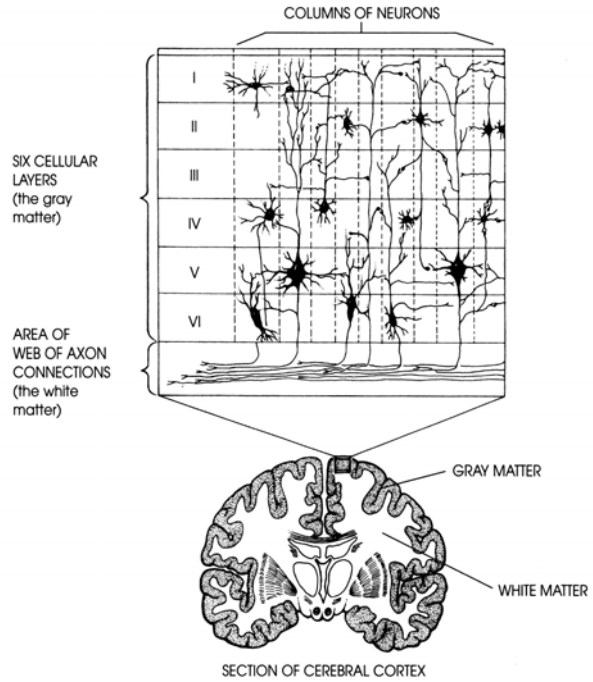
How could you use the Inductive Tower with your students and across your school?

Brain Matter

We just built an inductive tower which engaged our mind in constructing categories from a wide range of information. This is what we ask students to do after they have been reading either fiction or nonfiction: What are the details, which support your ideas, and lead to your main idea about what you read?

Not surprisingly, this is what our brain does unconsciously!

This is a schematic side view of the cortex with "tree-like" branching of neural networks:



As shown, there are six cellular "layers" in the hierarchy and information goes up and down these hierarchies, like climbing up and down branches of a tree. The tree diagrams we have been using, like the inductive tower (or tree) thus reflect our thinking and link to what is going on within the dark contours of our brain.

Thinking About our Thinking

Metacognition: Let's step back for a minute and notice our processes for reflecting on all of the information. This is an example of how to introduce students to teaching FOR, OF, and ABOUT thinking. Here is the process we just went through:

1. We offered an enquiry question: How do we synthesize all of the ideas that we have been investigating?
2. We then introduced you to the background on a specific visual mapping technique called Inductive Tower. We also described how this tool is based on the cognitive process of creating categories from the bottom up.
3. We introduced the Inductive Tower technique and showed the pathway for going from novice to expert in the use of the tool.
4. Then we engaged you in the collaborative networking process of THINK-PAIR-SHARE using the tool so that you could learn how to use thinking tools individually and in groups.
5. After completing the task of using the inductive tower to synthesize your ideas, we asked you to think about how you might transfer and apply this visual mapping technique in another situation.
6. Last, we offered information about how the processes of the brain are supported by the use of showing and creating hierarchies.

This kind of processing explicitly involves: teaching FOR thinking (for example, using enquiry methods and engaging dispositions), teaching OF thinking (for example, explicitly teaching learners how to use visual mapping and cognitive processing), and teaching ABOUT thinking (for example, showing learners about how the brain and mind work together.

This triad of thinking FOR, OF, and ABOUT thinking (Costa and Brandt) is a worthy model for ensuring that learners are actively engaged in learning content knowledge and creating products, but just as importantly, engaged in consciously improving their unique abilities to think and learn.

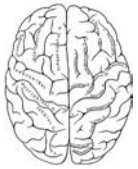
What are your Reflections at this time?

- Reflecting
- Concept Mapping
- Thinking about Thinking

Reflecting Back - Looking Forward

Let's look back at the steps we have taken on our journey so far:

Reflective Question	Summary
STAGE 1: GETTING STARTED	
Step 1: Who are we together?	Step 1: We used context Circles for looking at the context of Your school community. We Identified 6 Key Points to Thinking for our use.
Step 2: Why a thinking school?	Step 2: We thought about the need and reasons for developing school focused on thinking.
Step 3: What is the vision?	Step 3: We introduced the vision of thinking FOR, OF and ABOUT thinking.
Step 4: How do we do it?	Step 4: We offered 5 major phases for working together.
Step 5: What does a thinking student look like?	Step 5: We compared and considered the shift from "traditional" classrooms and a vision of thinking students.
STAGE 2: EXPLORING PATHWAYS	
Step 6: How does change happen?	Step 6: We discussed 1st, 2nd, and 3rd order change in light of two case studies.
Step 7: What are basic pathways?	Step 7: We introduced Dimensions, and selected models and techniques for thinking.
Step 8: How do we explore these pathways?	Step 8: We used the jigsaw technique to explore and share ideas about the pathways.

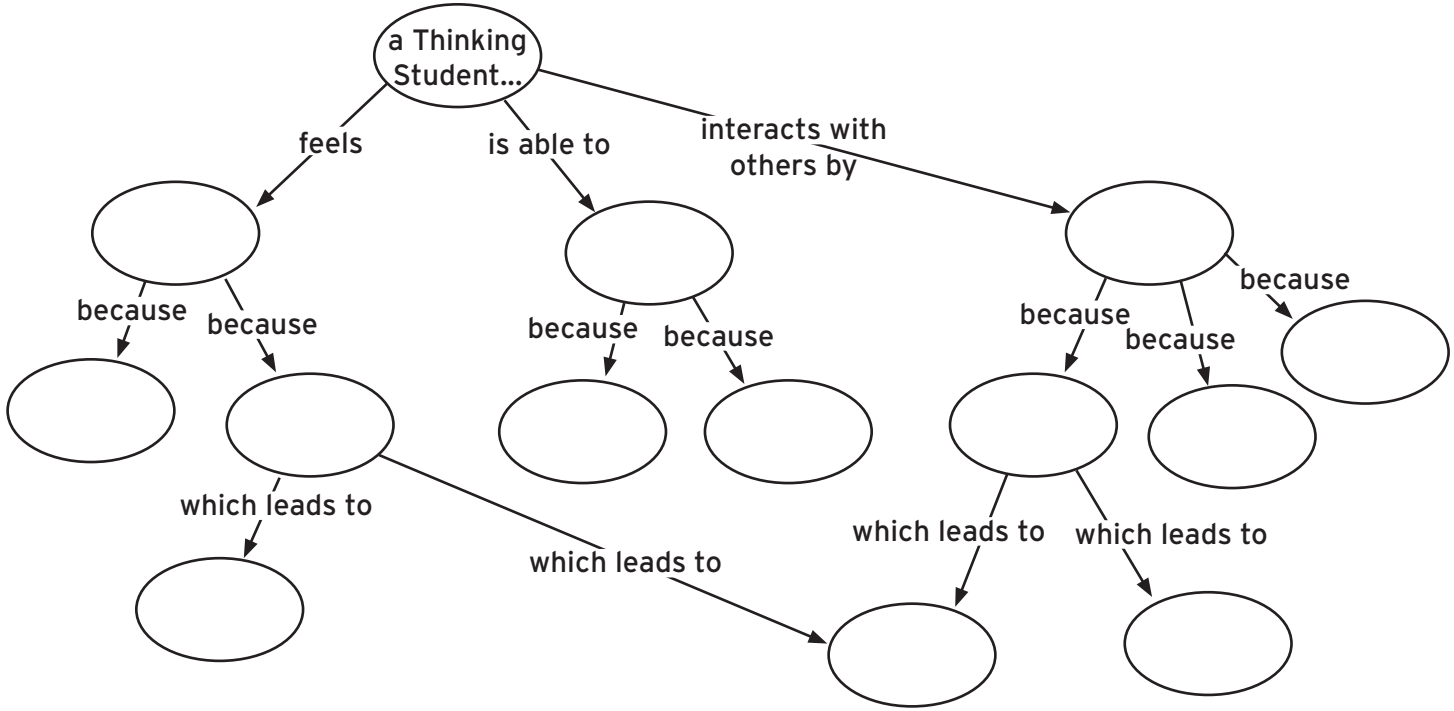


Concept Mapping Ideas

We now want to take your ideas and bring them together!

The visual mapping technique called Concept Mapping, developed by Robert Novak is fun, because it guides you to take a sentence like you have written and map it out!

In groups, create a concept map by drawing an oval at the top and write in the center: "A thinking student ..." Then use your conversations and experiences of today to expand this concept map:



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After you have expanded the concept map with a partner, share your map with two other people who have created a map. What are some of the ideas and phrases that are similar?

Thinking About Thinking

We have organized the general field of thinking by five Dimensions, Models (or programs), and Strategies. It is important to have this clarity of terminology as you begin to make sense of possible pathways:

Dimensions of Thinking	5 umbrella areas for defining and developing Thinking
Model or Program	models or programs for systematically teaching students within each of the 5 dimensions
Strategies	specific strategies within a program or model for use in classrooms across the school.

Our journey is now at a turning point. Together we have investigated a full range of ideas. Let's bring our ideas together by focusing on our core interest: students. Here is a reflective question:

How do we develop thinking students?

Turn to a partner and take some time reviewing this guide, your Working Field Guide notes, and talk about the journey so far. Take this opportunity to discuss your own ideas about what it takes to develop thinking students. Then, use these questions:

What does a thinking student look like?

What is a thinking student able to do?

How does a thinking student interact with others?

At this stage of the journey, what are your priorities?

- Priorities
- Sequence
- Learning brain

Priorities

How do we find out what the priorities are in this group at this step in the journey for developing thinking students? We are going to create a gallery of the concept maps from the group and gather ideas from each map.

Here are the key questions:

What are the two or three most important, common themes that you see across the maps?

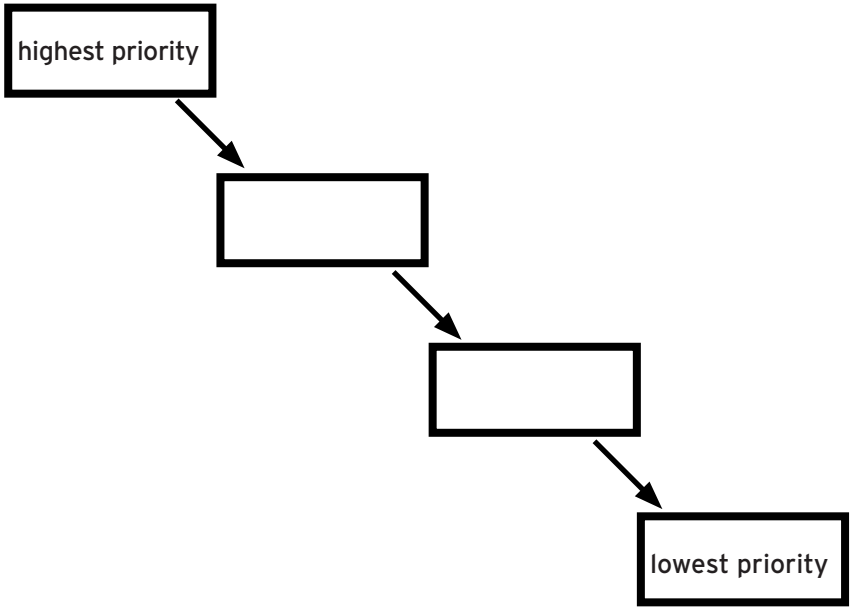
Take your Working Field Guide with you on the tour so that you can write down examples for each question.

After you have completed your tour of the gallery, return to your group of four people and compare notes. If your group of four had to decide on 4 common themes in what order would you place them?

Sequence Priorities

Now create a simple sequence of priorities by creating a flow chart from top to bottom showing what you and your colleagues believe are the most important common themes from all of the concept maps.

Write the highest priority at the top followed all the way down to your fourth priority. Each of these priorities are important as they will provide detailed information along our journey with you.



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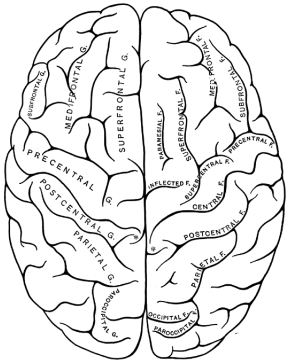
After we are done, we will have brought together ideas and created many different documents from across the whole group that will help guide the planning process for the next steps of the journey!

Brain Matters

Think about the visual mapping processes we just used. The concept mapping process may have seemed open ended and "fuzzy." The sequential prioritizing of your ideas, though difficult to do, may have seemed more focused as we made clear decisions. Both of these processes, used together along with reflective questions and collaborative networking of people and ideas, engage the whole brain that is itself a complex network of neurons.

The Learning Brain

The left brain fills in the details



The right brain gives us a "fuzzy" version

The corpus callosum is a complex network of 100 million neurons that connects the two sides of the brain

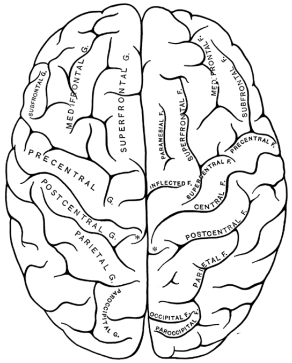
It's like a junction box that shuttles information backwards and forwards between the two sides of the brain

How did it feel to be creating, combining and organizing your thinking?

Which process, concept mapping or flow charting, was easier for you to do?

How could you use the concept map and the flow chart in your school?

How did the flow chart for prioritizing ideas both challenge and support your thinking?



90% of all information that comes into our brain is

VISUAL

40% of all nerve fibers connected to the brain are linked to the retina

36,000 visual messages per hour may be registered by the eyes

From *Brain Based Learning*, Eric Jensen, 1996

Step 10: At this stage of the journey, what are your priorities?

ExploringPathways

Notes:

Thinking Schools International

STAGE 3 PLANNING THE JOURNEY

Step 11 How are you going to plan for the journey?

Step 12 How will the transformative designing process be implemented?

Step 13 What does a Thinking School look like?

How are you going to Plan for the Journey?

- Planning
- Mindscaping

Planning

The journey toward becoming a school that focuses on engaging, improving and expanding every students' unique abilities to think is exciting. It is very much like beginning a long walk that may take a very long time, as a trip across your country from village to village, or a journey to a far away country. You may know a lot about the place that you are going and yet you will learn so much in the process of getting there and experiencing this new place on your own.

Planning for the journey is half the fun! This is because if you give yourself the time and you are working with a guide, you can imagine and create new possibilities for the future. The future is the vision of your school as revitalized around what our students need in the 21st century.

On the next page is a "mindscape" that embodies the metaphor of a "journey" toward becoming a Thinking School. This example was created by Joyce Wycoff and is excerpted from the Visual Tools Program developed David Hyerle.

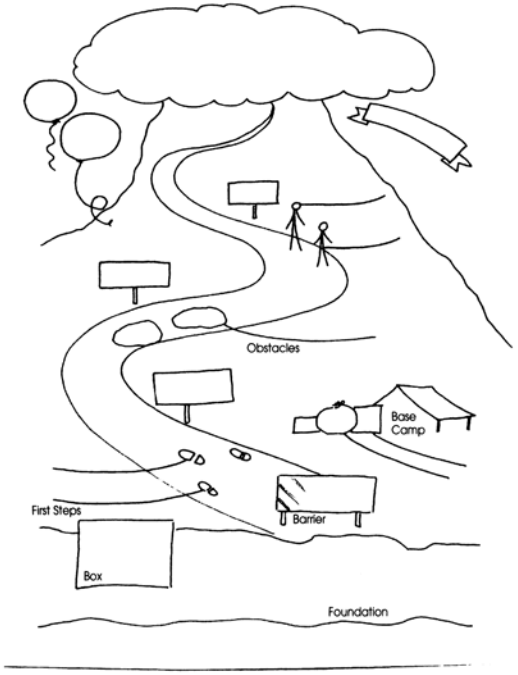
First, preview the overview page for the process of Mindscaping.

Next, turn to your Working Field Guide and think through this mindscape with a partner.

We will then share these mindscapes.

Mindscaping Overview

BACKGROUND: Techniques for Mindscaping have come from many sources including Nancy Margulies, Joyce Wycoff, and Suzanne Bailey. The foundation for Mindscaping is in the metaphorical drawing of ideas and is most useful when attempting to see the big picture of an idea, vision, or outcome. Much as an artist has an image in mind for an idea, a learner identifies a concrete image in everyday life—such as a path, a building, or a plate of food—to represent both the conceptual basis and detailed interrelationships for an idea. Like any rich metaphor, it is important that the image is a clear metaphoric reflection of the idea rather than merely a placeholder for information.



BASIC TECHNIQUES

- Begin with an idea and identify a concrete image of the idea that seems to represent the topic.
- As you begin to sketch the image think about how each part of the object may represent different concepts or aspects of the idea.
- After making an outline of the major parts of the object and linking them to the concept, begin adding details to the picture.
- Add colors and words to the picture and return to the picture to revise.

NOVICE is able to draw a picture that represents an idea.

APPRENTICE is able to choose a picture to draw that has direct relevancy to the concept and labels the major parts.

PRACTITIONER is able to enrich both the metaphor and conceptual depth of the picture through details and artistic rendering.

EXPERT is able to use the Mindscape for evaluation and reframing of an idea and create mindscapes with groups of people.

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What is a transformative designing process?

- Vision
- Journey
- Flow Chart

Vision

All of the thinking and the documentation of your thinking from today is essential to a transformative design that you may develop. The ARCS model is an important model for framing how we can work with you as guides.

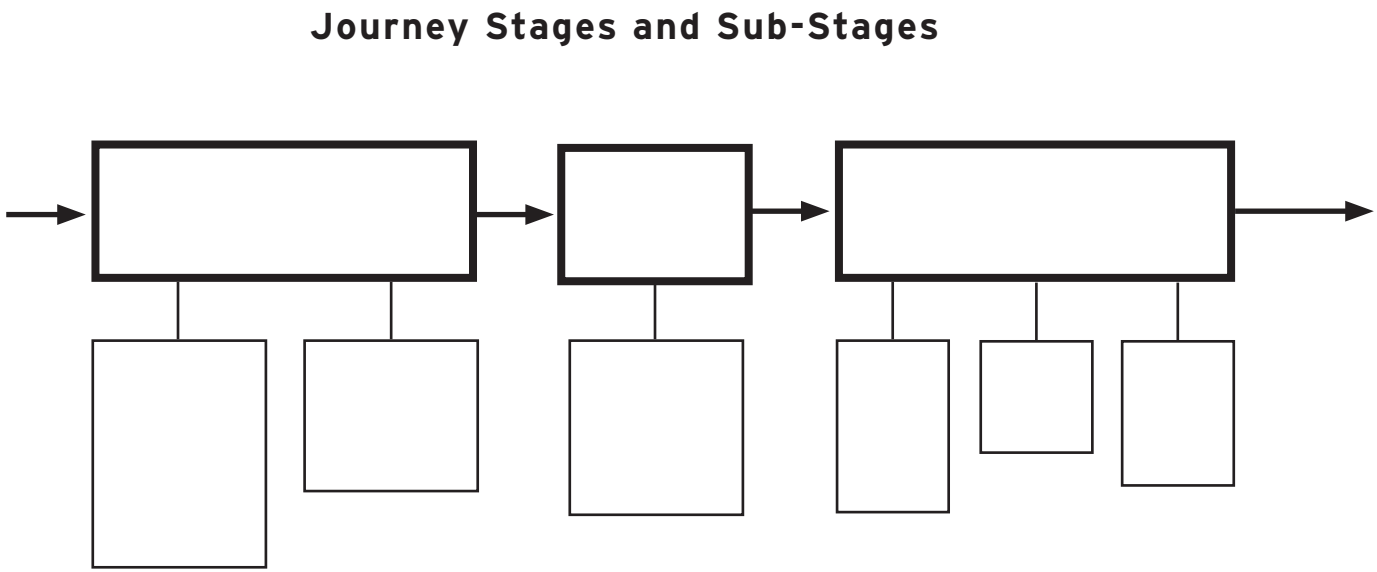
- Alignment of your vision of a Thinking School with your goals, planned actions or activities
- Representation of every stakeholder's perspective in articulating, questioning and leading the learning and work of the school
- Culture dimensions, like attitudes behavior and beliefs prevalent in your school that influence your definition of a Thinking School
- Sustainability of the implementation of your transformative design over time.

There are many people, organizations, documents, videos, documentaries and other resources that are easily accessed on the internet. A good starting point for accessing information, making contacts, and reviewing the journeys taken by other Thinking Schools is our website: www.thinkingschoolsinternational.com

Journey

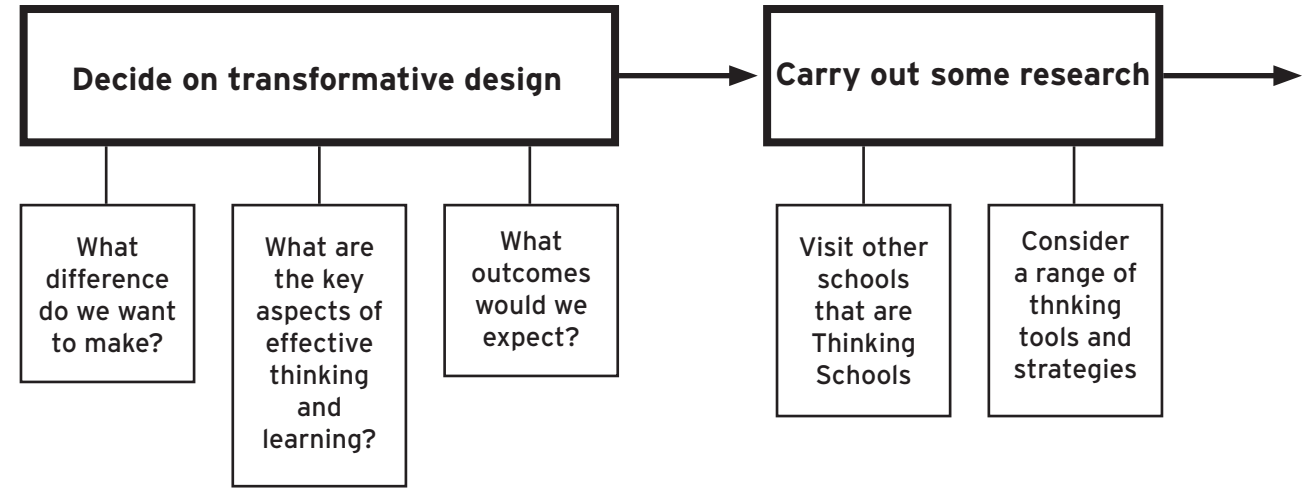
Here are the types of the questions we may ask:

- What are the best ways to approach the teaching of thinking for YOUR school?
- What do you think is involved in a whole school approach?
- What transformative steps are necessary for success?
- How far are you along in this process already?
- How will you build consistency through a developmental planning process?
- Are there clear timelines and actions for training, monitoring and sustaining the plan?

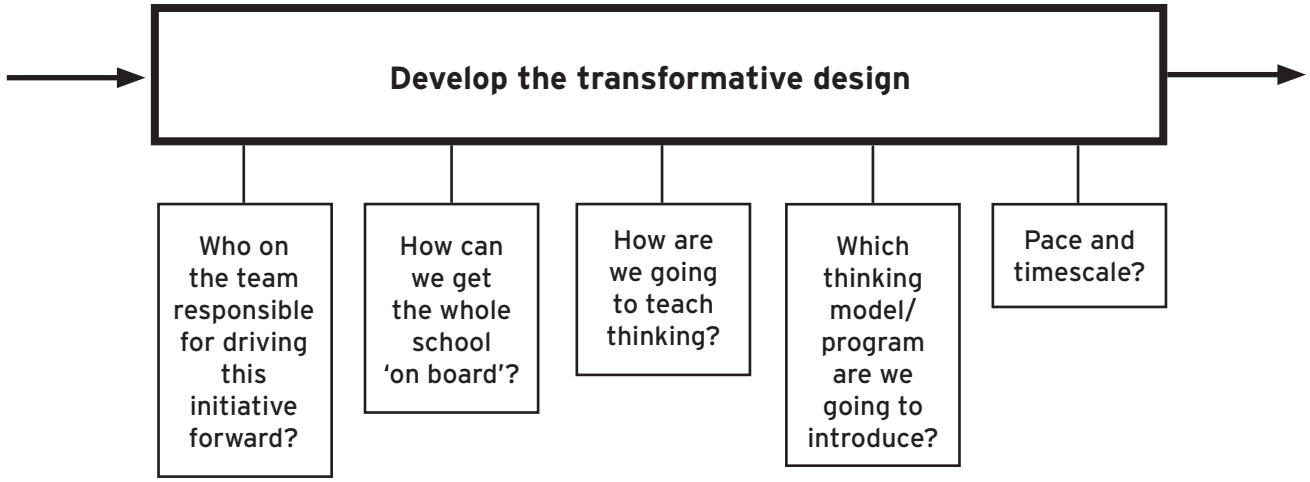


Here is a typical flow chart we begin with for starting the planning process:

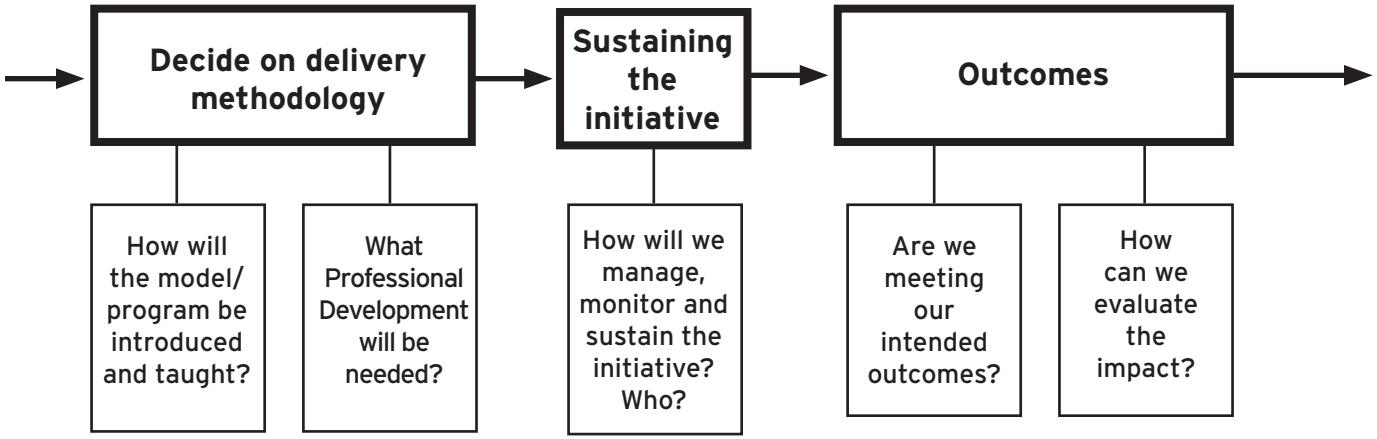
The Thinking School Journey (1)



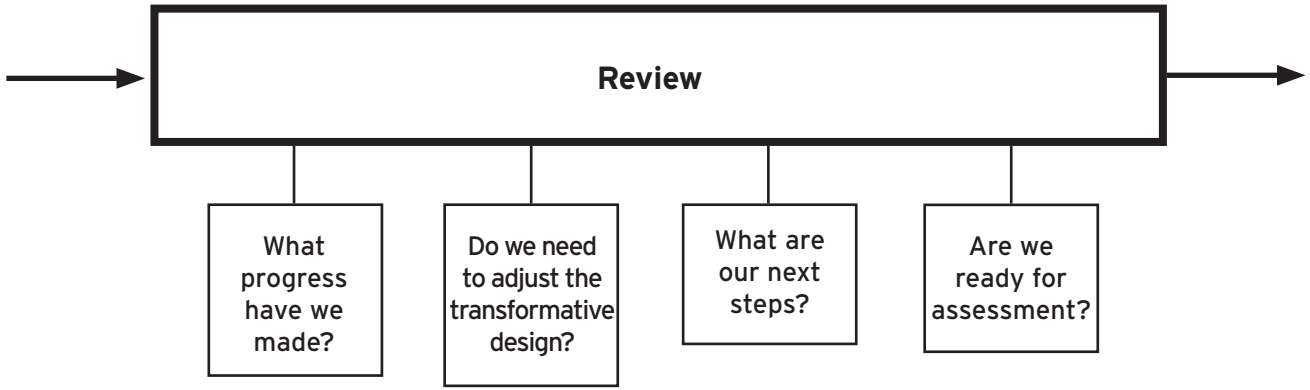
The Thinking School Journey (2)



The Thinking School Journey (3)



The Thinking School Journey (4)



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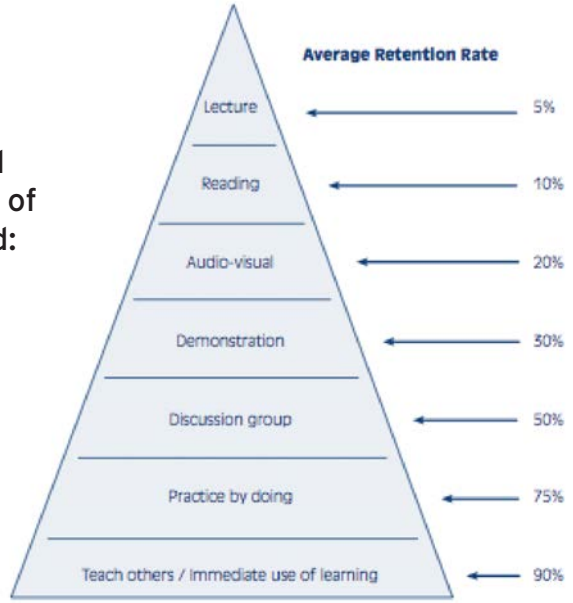
How does a Thinking School look and feel to you?

- Research
- Levels
- Feedback

Research

Our process with you through this guide, Growing Thinking Schools, and the Working Field Guide, has been based on research on learning and also more recent brain research. We have tried to balance the presentation by accessing different learning modalities by including visual, auditory and kinesthetic movement during a range of activities.

We have been mindful of foundational levels of this Learning Pyramid:



Take some time to look over the work we have done together both in this guide and the Working Field Guide. Consider the range of activities you have been engaged in and the different tools you have practiced.

Our goal has been not to train you in depth in processes FOR, OF, and ABOUT Thinking: our stated goals are to engage you in the process of being informed about different dimensions of thinking so that you are prepared to create your own vision and plan for Growing a Thinking School.

Feedback on the Sessions

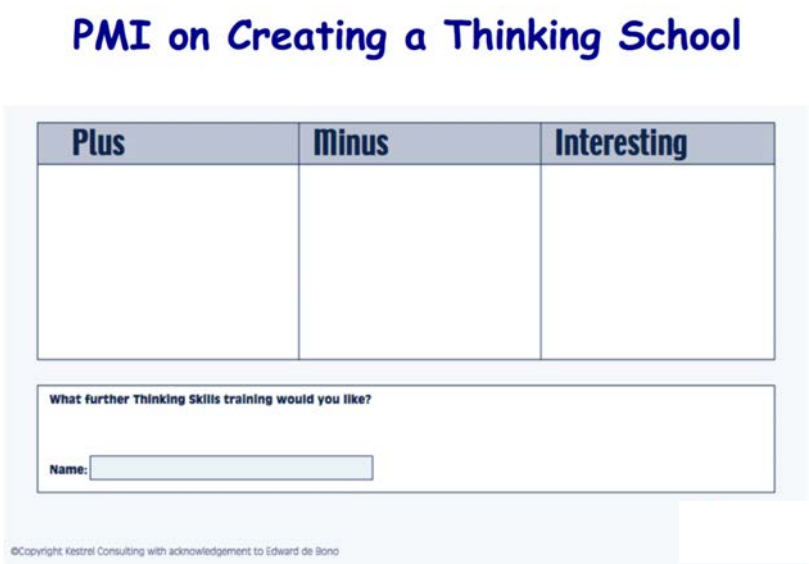
This simple technique was developed by Edward de Bono as a quick way for learners to give feedback on a learning experience.

On a blank piece of paper, please create three columns and respond to these questions:

PLUS:
What worked for you and your school during our work together and how are you going to use what you learned?

MINUS:
What did not work well for you and your school during our work and how could we have improved the sessions?

INTERESTING:
What happened that was intriguing, unique, and possibly transformed your thinking?


PMI on Creating a Thinking School

Plus	Minus	Interesting

What further Thinking Skills training would you like?

Name:

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Notes:

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STAGE 4 LEADING THE WAY

Step 14 How are we going to build a Transformative Design for Growing a Thinking School?

How are we going to build a Transformative Design for Growing a Thinking School?

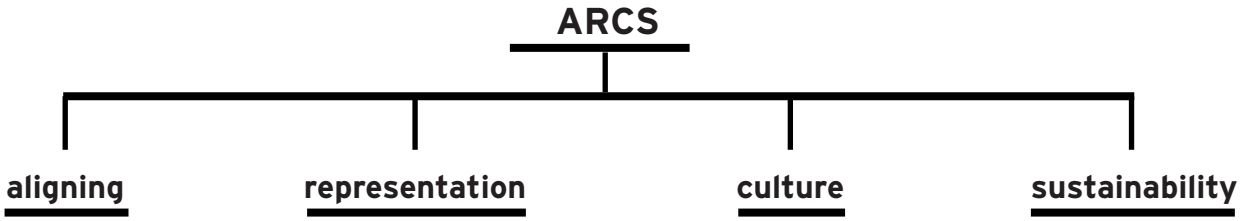
- Transform
- Approach
- Change
- Planning

Transformation

While it may seem obvious at this point, the process of Growing Thinking Schools engages the vision of whole school change, not simply improving questioning, or focusing on certain thinking skills, or implementing a single program. It is not just about students, or teachers, or senior management: it is about engaging in the transformation of an interdependent community. Everyone becomes a learner, teacher, and leader through this process of focusing on the co-development of thinking, young and old.

It is important, then, that the leadership/drive team develop a plan that is not reactive, but that is adaptive and transformative so that as a school you remain generative and open minded. The essence of building a transformative design is to create a vision, a long term plan, and also design high quality ways of communicating across the whole school.

You have many different documents and your own experiences from our work in the three previous stages and 13 steps, along with feedback from your colleagues. Before reviewing these documents, we may look at a range of models and formats for developing a transformative design that we have used successfully in the past. Keep in mind that these documents may be used with the ARCS Framework for Sustainable School Improvement (Communities for Learning: Leading lasting change®).



Approach

Here are some basic steps for getting started on a transformative design using the documents and ideas generated from our sessions using this guide:

Whole School Thinking Approach

- **Identify the key Dimension that your school is most interested in as a starting point.**

  Alignment Question: in what ways does this Dimension promote our vision or improvement goals?

- **Create a professional development plan that directly engages all faculty and students across the whole school.**

  Culture Question: how has this plan's questions, decisions and actions been informed by the diverse perspectives of faculty and students?

- **Identify the Model(s), programs and/or resources within the dimension that fit best within the culture of your school.**

  Representation Question: in what ways do these model(s) support and deepen the positive cultural aspects of the school?

- **Reflect on the degree to which the plan engages all faculty, students and the leadership team in using and improving their own thinking dispositions, processes, and reflective practice so that the focus is not just on students, but on how the whole school as a community is in a transformative process over time.**

  Sustainability Question: how will this plan be sustained over time?

Create a flow chart of a three to five year plan for your school.

Change

The BIG Picture of Change: On the next two pages is an overview of a model developed from extensive work with change processes in many different kinds of organizations, from schools to businesses. This may be helpful as a framework for understanding how—when taking into account alignment, representation of stakeholders, culture and sustainability—organizations are cycling though these steps from the ground up:

Kotter's Change Model

Professor John Kotter, Harvard Business School.

Steps

Starting from the bottom, which of these steps have already been started?

8. INSTITUTIONALIZE NEW APPROACHES
- Talk about progress every chance you get. Tell success stories about the change process, and repeat other stories that you hear
- Publicly recognize key members of your original change coalition, and make sure the rest of the staff - new and old - remembers their contributions
- Articulate the connections between the new behaviours and success
- Develop the means to ensure leadership development and succession

7. BUILD ON THE CHANGE
- Foster and encourage determination and persistence
- Highlight achieved and future milestones
- Set goals to continue building on the momentum you've achieved

6. CREATE SHORT TERM WINS
- Set aims that are easy to achieve - in bite-size chunks
- Plan for visible performance improvements
- Create those improvements
- Recognise and reward improvements

5. EMPOWER OTHERS TO ACT ON THE VISION
- Remove obstacles
- Enable constructive feedback and lots of support from leaders
- Change systems or structures that seriously undermine the vision
- Encourage risk taking and non-traditional ideas, activities and actions

4. COMMUNICATE THE VISION
- Involve as many people as possible
- Communicate the essentials
- Appeal and respond to people's needs
- Teach new behaviours by the example of the guiding coalition

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3. CREATE A VISION FOR CHANGE
- Get the team to establish a simple vision and strategy
- Focus on emotional and creative aspects necessary to drive service and efficiency

2. FROM POWERFUL COALITION
- Get the right people in place with the right emotional commitment
- With the right mix of skills and levels

1. CREATE URGENCY
- Inspire people to move
- Make objectives real and relevant

Questions

Here are some of the questions that have surfaced as we begin developing a transformative design with schools:

- What difference do we want to make? For whom?
- To what degree are we willing to challenge ourselves, colleagues, and students?
- What outcomes would we expect?
- What is the difference between thinking skills, thinking curriculum, thinking classrooms, and thinking schools?
- What kind of learners do we want? Students who can ... are...
- What kinds of thinking do we want students to do? What do they do well? Not well?
- What is teaching OF thinking? What is teaching FOR thinking? What is the teaching ABOUT thinking?
- What are the essentials of a thinking curriculum?
- How much change would be required to introduce this?
- What would we need to consider in a transformative design?
- How would we select thinking strategies?

- Who will manage the process? What structures would we need for planning, monitoring and reviewing a school-wide initiative?
- What delivery models could we use across the school, in departments and classrooms?
- What teacher training would be effective? When?
- Which methods of assessment, reflective practice and accountability would work in this school?
- How would we get students to value this shift in perceptions of learning?
- What would be our implementation targets for the introductory year?
- How could we involve students?

Planning Document

Here Is one planning document that we may use together as we move forward:

Goal What are the goals? Keep the number as manageable as possible. Make sure goals are clearly related to the school's priorities in developing as a Thinking School.	**Competencies** What are the skills and competencies people need to successfully meet the goals that have been established. Make sure these skills and competencies reflect the ultimate goal of sustainability.	**Conditions** What material and financial resources are needed to fully support this effort and provide optimal conditions for professional learning and student growth and development? Make sure to consider material resources as well as physical space necessary to support the learning.	**Success Criteria** Against what criteria will success be judged? Make sure wherever possible, to express these in terms of pupil outcomes – what will be the impact on pupil's learning? Refer explicitly to the school.	**Evaluation Methods and by Whom** How will the school evaluate the degree to which the criteria have been met and who will evaluate the effectiveness of the tasks? Identify the methods which will be used: • classroom observation • quality of learning environment • pupil perceptions • discussions with staff, governors, parents • assessment data Name the person(s) who will assess the impact on standards, teaching and learning.	
Tasks What are the tasks which need to be done in order to meet the goal? Identify and express clearly, all the tasks which will be needed to each goal.	**Timescale** What is the timescale? Identify: • When you hope to reach the goal • When each task will be done	**Staff Responsible** Who will carry out the tasks? Name the people:	**Monitoring Tasks and by Whom** Who will be responsible for monitoring? Identify the actions to be taken and by whom:	**Governors' / School Board Members' Action** Name the 'partner' governor(s) How will the governor be informed/ involved?	**Costs** How much will it cost to carry out each of the tasks? Identify as precisely as possible how much it will cost to do the tasks and carry out the evaluation in terms of money and staff time..

Remember

Many of the visual mapping tools and information organizers that have been collected during our session will be important to reference for developing your transformative design. You may want to reference the information drawn from the sessions so that your colleagues see that their thinking is fairly represented in the plan.

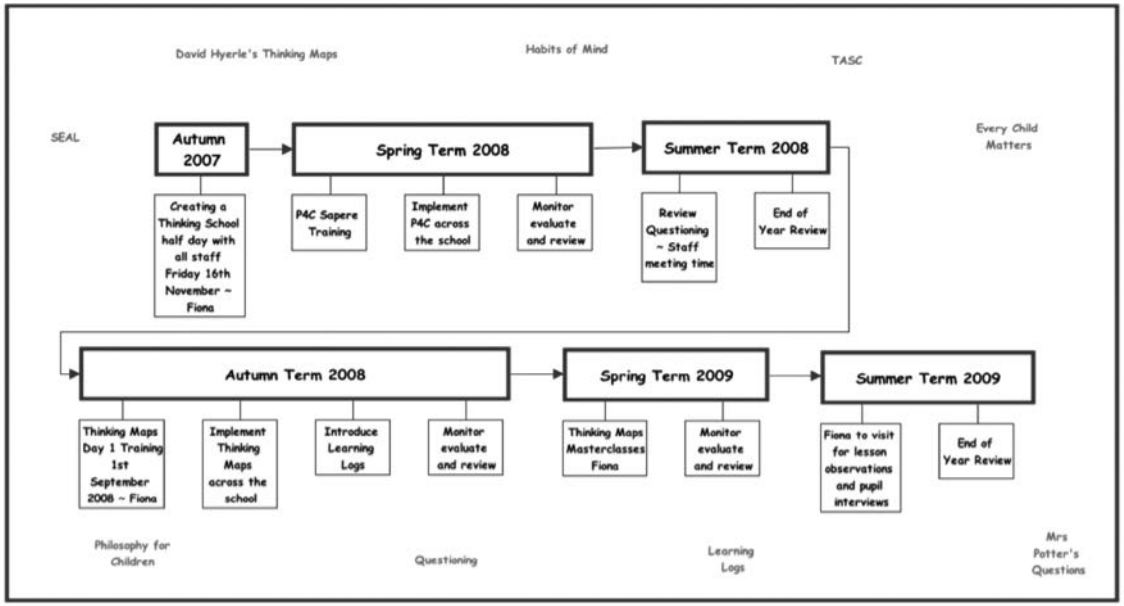
Let's begin the process...

Goal	Competencies	Conditions	Success Criteria	Evaluation Methods and by Whom	
Tasks	**Timescale**	**Staff Responsible**	**Monitoring Tasks and by Whom**	**Governors' / School Board Members' Action**	**Costs**

Planning

Notice that within the outside rectangular frame in this example are some of the Dimensions of Thinking presented in Stage 2 Step 8 as well as models and strategies that influenced how the plan was put together.

Your school might find it helpful to start their plan with a Flow Map!



From Program Implementation to Paradigm Shift:

Here are some key steps that other Thinking Schools have taken to ensure that the language of thinking is not perceived as simply another "program" being implemented in the school. It is understood as a long term process through which thinking is at the center of the culture of the school and for the future development of all students thinking and lifelong learning:

- common thinking dimension(s), and/or language of, for and about thinking
- explicit lessons to teach the agreed upon models, tools and skills
- infusion across the curriculum and grade levels
- a planned program of staff training
- linked to performance management and school wide targets

TSAP • Thinking Schools Accreditation Process

By engaging the entire school community in a process of self-study, becoming accredited as a Thinking School provides a meaningful opportunity for continuous learning and creates an enduring culture of reflective practice. Over 80 schools have elected to participate in a voluntary accreditation process in order to reflect on, deepen, and sustain their development as a Thinking School. These schools have chosen to use the accreditation process as an opportunity to demonstrate and affirm their commitment to the principles of becoming a Thinking School.

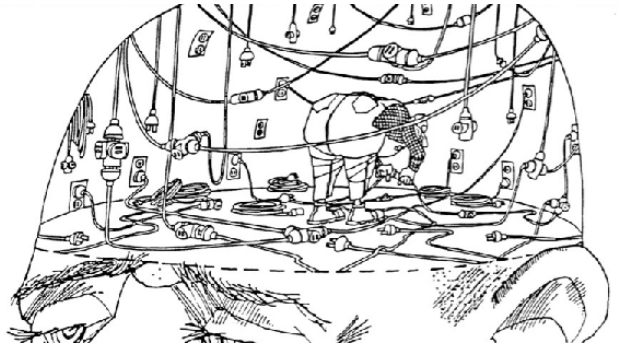
TSAP • What is the Thinking Schools Accreditation Process?

The Thinking Schools Accreditation Process (TSAP) offers an opportunity for schools to engage in a systematic, collaborative, enquiry process. The framework for accreditation is based on 5 Key Areas for Reflection and 15 Criteria representing the vision of directly facilitating thinking as a foundation for early childhood through adult education and for nurturing all students as global citizens.

Working toward becoming a Thinking School is a developmental process, one that continues to mature and deepen over time. Schools on this journey generally pass through three stages.

A school might elect to wait until it has progressed through the early stages of development as a Thinking School before it engages in the formal accreditation process. Some schools, however, may be interested in participating in a formative review process in order to have the added benefit of feedback along the way. Participating in a formative review process provides schools with immediate and timely input from accrediting partners that can affirm, energize and guide the school's development as it progresses toward its vision.

The formal Thinking Schools Accreditation Process (TSAP) is an opportunity for schools to engage in a systematic, highly descriptive, enquiry process focused on the 5 Key Areas for Reflection and the 15 Criteria. The 5 Key Areas for Reflection and 15 Criteria provide the guidelines through which a school and its accrediting partner can make determinations regarding the schools development as a Thinking School. The primary purpose of this process is for the school to use the information they generate to continue to inform, guide, and inspire their ongoing development as a thinking school.



Level 1—Emerging

Schools at this level have formally initiated the process of developing as a Thinking School. A "drive team" has been formed representing a broad spectrum of stakeholders from the school community and an initial plan of action has been designed. Professional learning opportunities have been undertaken to engage the school community in forming its identity as a Thinking School. Professional learning opportunities in specific pathways in student-centered models have also been introduced and these models have begun to be used in the classrooms and the school as a whole. levels DOC.

Level 2—Integrating

At this stage, schools are continuing to refine its practices and use of student-centered models for developing thinking, inquiry-based learning and dispositions associated with successful learners. Evidence of the integrated use of these practices is apparent both in how they are used together and also in the way they have become part of the practices used throughout the school and across roles and ages.

Levels 1 and 2 are the formative stages during which schools are forming their identity as a Thinking School and introducing, expanding and refining their repertoire of practices. Schools at these levels can elect to work with a Reflective Coach (RC) to assist them in moving thoughtfully toward formal accreditation. It is recommended that at each of these two levels, schools work with a Reflective Coach for a minimum of 3 formal contact times during the year. The RC guides schools in the use of the 5 Key Areas for Reflection and the 15 Criteria as the school develops its plan for becoming a Thinking School and designs its approach for documenting its work.

Level 3—Sustaining

Level 3 is the point at which a strong foundation has been established, a clear sense of purpose and intention has become evident in the school, and the structures and processes are in place through which the school can continue to embed, deepen and sustain its efforts. It is at this stage, too, that a school becomes a resource to other schools on their journey of becoming a Thinking School.

Schools at Level 3, while continuing to grow and develop as a Thinking School, demonstrate a consistent level of attainment across all 5 Key Areas for Reflection and the 15 Criteria associated with those areas.

TSAP • Why?

The primary purpose for schools to engage in seeking accreditation is to help create an environment of self-study and assessment within each school community. This focus on "reflective practice" is fostered through guidance and feedback from informed "critical friends" on our TSAP team. The process of collecting and reflecting on artifacts like classroom work, videos, and photos practical use of a range of models for thinking becomes a catalyst for continuous improvement. Schools use the information they generate to continue to inform, guide, and inspire their ongoing development.

A second purpose is to network with other schools that have already become accredited and learn from the processes, feedback, outcomes, and insights from educators and students around the world.

A third purpose is based on authentic recognition of learning across a whole school: accreditation as a Thinking School offers each school recognition for making well documented shifts toward student centered learning for global citizenship.

Formal certification and publication of the TSAP Portfolio also offers students, teachers, parents and community members an opportunity for celebrating their efforts and outcomes… and for projecting the school culture forward toward deeper, sustained implementation.

TSAP • How?

The school community meets to decide whether or not to engage in the Thinking Schools Accreditation Process. This often happens after the school has already begun implementation of their own plan for implementing a Thinking Schools approach. If the decision is to move forward, the school contacts Thinking Foundation and is linked to an accrediting partner who will guide them through the process. There are six basic steps of the process: Initiation; Preparation; Self-Study; Accrediting Partner Review; Action Plan; and Dissemination.

A representative from the accrediting partner meets (in-person or online) with the school's Drive Team to explain the process, clarify the 5 Key Areas for Reflection and the 15 Criteria, and assist the school in establishing a preliminary timeline for the accreditation process. Requirements for submitting a web-based portfolio of the school's self-study are explained and any technical support the school needs is discussed.

• Initiation

The school community meets to decide whether or not to engage in the Thinking Schools Accreditation Process. If the decision is to move forward, the school contacts Thinking Schools International and is connected to an accrediting partner who will guide them through the process.

• Preparation

A representative from the accrediting partner meets (in-person or online) with the Drive Team to explain the process, clarify the 15 criteria, and assist the school in establishing a preliminary timeline for the accreditation process. Requirements for submitting a web-based portfolio of the school's self-study is explained and any technical support the school needs is discussed.

• Self-Study

The school designs a process for conducting a self-study related to each of the 15 criteria. The organization of this process may vary from one school to the next and will reflect the particular character of each school. As an enquiry process, the use of questions is central to the self-study. Guiding questions are offered for each of the 15 criteria but the school is encouraged to develop additional questions that are specifically relevant to them. The accrediting partner periodically checks in to offer guidance and support and can be contacted, as needed.

• Accrediting Partner Review

Following the submission of the school's self-study to the accrediting partner for review, the accrediting partner conducts a site visit or virtual tour of the school, meeting with various members of the school community and touring the school and classrooms. At the completion of the review, exit interviews with the school and the Drive Team are conducted. The accrediting partner reviews the visit and the documentation of the self-study and subsequently issues its determination.

• Action Plan

The information from the accrediting process is used by the school to develop or revise its Action Plan. If accreditation is not granted at this time, the accrediting partner meets with the Drive Team to review the findings, make recommendations and offer technical support as needed or requested.

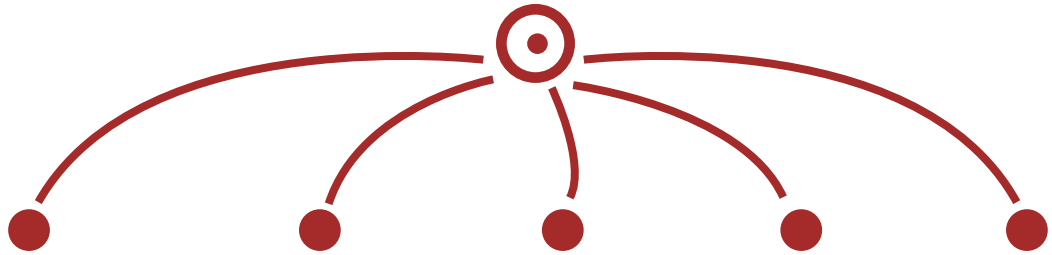
• Dissemination

If granted accreditation, a final version of the school's self-study is registered on the Thinking Schools International website and made available to the larger educational community as a web-based portfolio.

The Five Areas for Reflection and Fifteen Criteria

Schools focus on five areas for reflection as they develop and think about their own transformative design for the journey towards becoming a Thinking School: Student Centered Thinking, Facilitative Leadership, Integrated Professional Learning, Interactive Assessment, School-Wide Ethos. There are 15 basic criteria and related reflective questions associated with these five areas that are used by schools to engage in a process of self-study to assess their progress toward becoming a thinking school. The same 15 criteria and reflective questions are used by an accrediting partner to grant accreditation to schools that have met their own vision and objectives as set forth in their transformative design.

Areas for Reflection and Criteria



Student Centered	Facilitative Leadership	Integrated Professional Development	Interactive Assessment	School-WIde Ethos
Student Centered Learning	School Leadership Team	Professional Development	Assessment to Inform	Whole School Culture
Student Fluency	Implementation Plan	Differentiation for Educators	Reflective Thinking	Collaborative Community
Communicating Learning	Learning Centered Leadership	Collaborative Inquiry	Interactive Assessment	Global Networking

Student Centered

Student Centered Thinking develops life-long, independent and cooperative learning skills including reflective, critical, and creative thinking and the capacity to solve problems and transform information into meaningful knowledge and action.

Guiding Criteria:

1. Student Centered Learning

Students' development as thoughtful, caring, responsible learners is reflected in learning outcomes, attitudes, behavior of pupils, across diverse populations.

2. Student Fluency

A high percentage of students are fluent with skills, tools, and models and use them in an integrated manner.

3. Communicating Learning

Media/technologies are used by students with thinking models to access, process, and communicate ideas.

• Reflective Questions:

"In what ways do our students demonstrate the impact that the thinking models have had on their development as learners?"

"To what degree are our students able to use the skills, tools, and models fluently and in an integrated manner?"

"How have our students been able to incorporate the thinking models with their use of technology and media?"

Facilitiative Leadership

Facilitative Leadership engages all members of the school community in interactions that promote group and individual learning, informed and thoughtful decisions, and a planned, sustained effort toward a common purpose.

Guiding Criteria:

4. School Leadership Team

A vibrant and highly effective "Drive Team" reflecting support and involvement from key stakeholders in the school community has been developed and is actively engaged.

5. Implementation Plan

A clearly articulated long-term plan for the introduction of the thinking models and for their growth beyond the accreditation process has been designed and is being actively followed.

6. Learning Centered Leadership

The leader incorporates the thinking models in coaching and guiding reflective practice, supporting active, purposeful engagement and collaboration, and for promoting thought-filled decision-making.

• Reflective Questions:

"What role has the Drive Team played in leading the school through the Thinking Schools process and how have they been able to engage the entire school community?"

"How does the plan for developing our school as a thinking school reflect a commitment to this process over time and to what degree is it being effectively used to guide decision-making as we move forward?"

"in what ways do the practices of the school leader(s) support and promote reflection, purposeful interactions and thought-filled decision-making for both individuals and groups within the school

Integrated Professional Learning

Integrated Professional Learning provides access to planned, connected and diverse opportunities for continuous learning and growth for individuals and groups within the adult school community in the thinking pathways the school has chosen.

Guiding Criteria

7. Professional Development
Ongoing, systematic professional learning opportunities are provided to develop and support expertise of the thinking models and to sustain their integrated use over time.

8. Differentiation for Educators
Teacher and leader skills and practices grow across a variety of teaching and leading styles, content areas, and cultural backgrounds.

9. Collaborative Inquiry
Individual and group professional learning opportunities utilize an inquiry approach, incorporate peer learning, and promote reflective decision-making.

• Reflective Questions:
"In what ways does the professional learning plan support the development of expertise in the thinking models, promote their integrated use, and sustain the work with them over time?"

"How is growth in the skillful use of the thinking models being represented in a variety of teaching and learning styles and evident across all content areas and diverse cultural backgrounds?"

"In what ways has an inquiry approach been used to engage individuals and groups of people in self-directed and collaborative learning processes to improve instruction and deepen the work with the thinking models?"

Interactive Assessment

Interactive Assessment is a continuous process of reflection on growth and development to inform both learner and instructional decision-making that engages teachers and learners in a variety of formative and summative approaches.

Guiding Criteria:

10. Assessment to Inform
Differentiated forms of both formative and summative assessment are used to inform instructional and learner decision-making.

11. Reflective Thinking
Reflective assessment of thinking is an explicit, regular dimension of everyday classroom practice.

12. Interactive Assessment
Students, as well as teachers, are actively involved in the assessment processes and opportunities exist for both of them to use these processes to develop as autonomous learners and teachers.

• Reflective Questions:
"How is a variety of assessment strategies, both formative and summative, being used to inform instructional and learner decision-making and to promote the ongoing development of the school as a thinking school?"

"In what ways has the assessment of thinking been made an explicit, daily part of the schools approach to teaching and learning?"

"How is the use of assessment designed to promote the development of both students and teachers as autonomous, self-reflective learners?"

School-Wide Ethos

School-Wide Ethos reflects the quality of the thought-filled interactions between and among people within the school and the larger educational community and the ways in which all members actively demonstrate respect for each other and the capacity to invite and consider multiple perspectives.

Guiding Criteria:

13. Whole School Culture

The organizational structure and visual presentation of the school reflects a positive, caring and creative atmosphere representing all stakeholders.

14. Collaborative Community

Regular opportunities, across roles and responsibilities, are designed for school members to discuss and reflect on the teaching and learning experiences related to the development of a thinking school.

15. Global Networking

The school actively develops opportunities for collaboration within and beyond the school community, including other schools in the TSI network.

• Reflective Questions:

"In what ways does the organizational structure of the school and its visual aesthetic support and promote a positive, caring and creative atmosphere and represent all stakeholders in the process?"

"What ongoing formal and informal opportunities have been designed and are actively used by members of the school community across roles and responsibilities to discuss, exchange ideas, and reflect on the teaching and learning experiences related to the development of a thinking school?"

"How has the school promoted collaboration within the school and reached beyond itself to connect with the larger educational community, including other schools within the TSI network?"

Areas for Reflection and Criteria

Student Centered	Facilitative Leadership	Integrated Professional Development	Interactive Assessment	School-WIde Ethos
Student Centered Learning	School Leadership Team	Professional Development	Assessment to Inform	Whole School Culture
Student Fluency	Implementation Plan	Differentiation for Educators	Reflective Thinking	Collaborative Community
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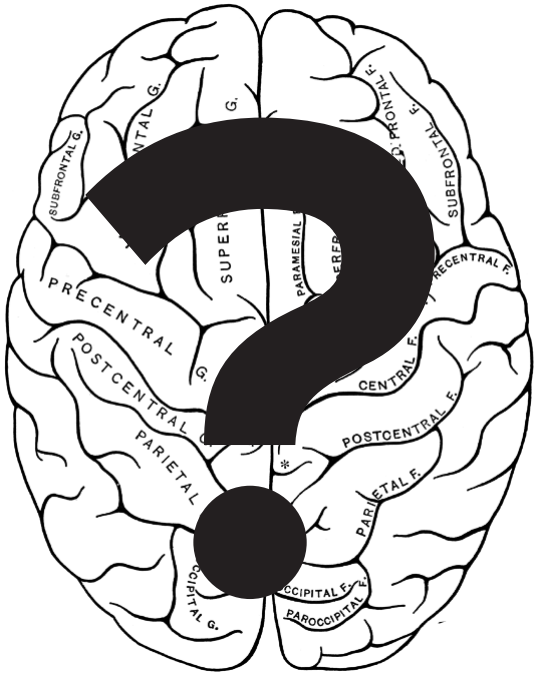
Questioning for Shared Inquiry

The following pages on Questioning for Inquiry are an introduction to the Thinking Schools Pathway for Questioning for Inquiry. This section incluldes:

- introductory strategies for involving students with inquiry to be integrated with the other pathways including Visual Tools:
  —powerful questions
  —interpretive questions for comprehension
  —the question game
- an inquiry model: The Reflective Action Process (RAP) Model



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 answers and understanding. The purpose of this technique is to develop interest, understanding and quality of inquiry.

Object or 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 qualities that encourage noticing details and/or curious to learn more about the image contents. It is an excellent tool to use an image from a text or book that is being studied as an introduction and anticipatory set prior to reading the article.

Order of Technique

- State *you will be shown a common object (or image) which we'll ask questions about*. 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. 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 and they hone their presentation skills. They will be able to see the object or image throughout the time they are sharing questions. An extension is pair/share or small group sharing of questions prior to whole group sharing.
- If the object or image is something they are studying, the questions might be recorded (for example with a Thnking Map). 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.
- The teacher never provides answers and only occasionally asks a question themselves 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.

Powerful Questions can be effectively used with Thinking Maps to see, reflect, and assess the thinking of the group and participants. The frame of reference can be used to develop each question further.

Interpretive Questions for Compehension

When exploring any type of text (fiction, non-fiction, poetry) it is important to ask interpretive questions that build upon one another. 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 to Guide Discussions

Character motivation - *why a character does something*

- Developing an interpretive question to discover the reasons behind a character's statements, actions, &/or thoughts.
- Interesting use of language.
- An interpretive question used to develop discussion on how the author expresses an idea or creates a description.
- Some details in the story can function as important elements in an interpretation. The answer cannot be simply resolved from a dictionary or other factual source.

Plot. Well written stories have plots that are interconnected with the various parts supporting one another. An interpretive question can help discover the meaning and relationships between the parts of the story plot.

Key words. start a question with: how, what, where, why, and when.

Creating and 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 story for evidence.
- *The question should be clear.* The participants should easily understand the question. Use phrases directly from the text. If a person is used in the question use their name (not a pronoun).
- *The question should be specific.* The question should fit the story and not generic to any story.

Interpretive Questions for Comprehension *continued*

Leading a Discussion

Here are the basic ground rules for leading a discussion:

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

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

Prepared and Spontaneous 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 story. 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 story and try the questions out on them. This will provide an opportunity to test the Testing the Question criteria.

Spontaneous interpretive questions are an important part of all discussions. Experience with preparing questions and using interpretive questioning techniques support spontaneous questioning.

The Question Game

To start the question game 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. An example is:

Topic: (e.g. object in the room) 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: How can we improve the light bulb?*
- *Questioner B: Who would design the improved light bulb?*
- *Questioner A: What type of knowledge is needed to improve a light bulb?*
- *Questioner B: Will the designer be compensated fairly?*

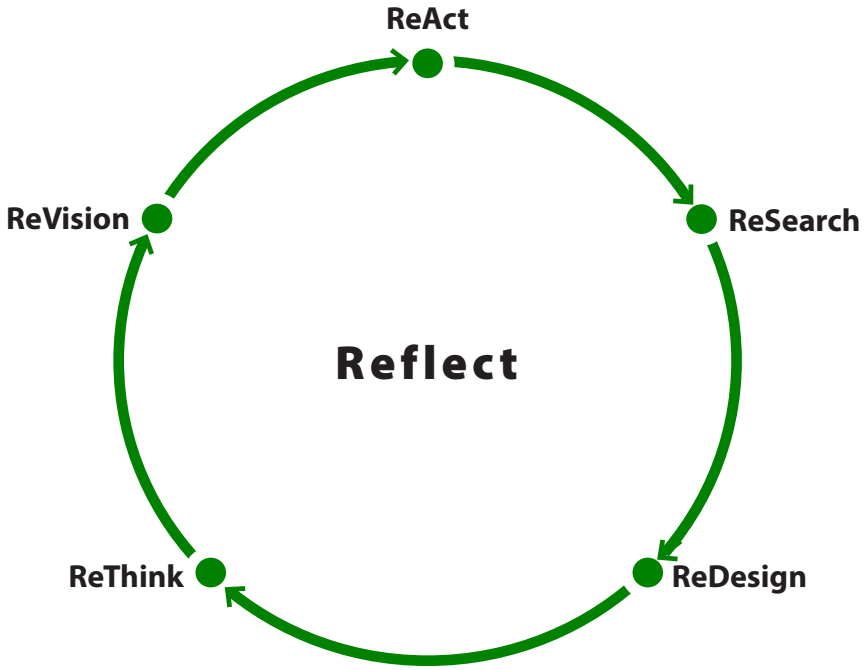
The Reflective Action Process (RAP) Model

The Reflective Action Process (RAP) explicitly develops the ongoing use of questions by learners to deepen understanding of ideas, experiences, and curricula content in order to solve problems, make informed decisions and identify actions. There are five processes that are cyclical in use, Re ACTING, Re SEARCHING, Re DESIGNING, Re THINKING , Re VISIONING.

The RAP Model supports and promotes the development of meta-cognitive thinking and acting—the ability of learners to understand and be aware of their cognitive processes and dispositions towards learning, and to skillfully, strategically and reflectively direct their actions in effective, constructive and creative ways.

The Reflective Action Process:

- recognizes and validates curiosity as a fundamental impulse of human beings
- promotes and develops the ability of learners to pose meaningful and reflective questions throughout the enquiry process
- increases learners' awareness and understanding of their own and others' cognitive processes
- cultivates dispositions of mindfulness in how learners' approach the process of constructing ideas and taking action
- develops the ability of learners to purposefully direct and mediate their own learning experiences, individually and in cooperation with others
- supports the development of life-long learning



The Reflective Action Process (RAP) Model *continued*

The Reflective Action Process provides a framework for the ongoing construction and re-construction of ideas and actions by individuals and groups of people as new learning is developed. Here is a brief summary of the phases involved in the RAP model:

ReACTING

- Learners or groups of learners initiate or react to a topic, event, idea, problem
- Learners or groups of learners identify metacognitive tools, dispositions and skills that will support them in the Reflective Action Process
- Learners or groups of learners use reflective questions to make connections
- Different perspectives are considered (this continues throughout the process

ReSEARCHING

- Learners or groups of learners pose questions for inquiry
- Questions are sorted and synthesized
- Primary or essential questions are framed; Secondary questions for these are identified
- Hypotheses are formulated
- Investigation is planned
- Information is gathered
- New questions may be formulated in light of new information and insight requiring further research

ReDESIGNING

- Reflective questions are used to uncover meaning, transforming information into knowledge
- Hypotheses and essential questions are revisited
- Learning is synthesized and conveyed to a variety of audiences using different "designs", forms, modes, and technologies and for multiple purposes
- Actions are determined and the design and plan is finalized
- Impact of and responses to actions are recorded and reflected upon

ReTHINKING

- Implications of new learning are considered
- Problems, challenges, ideas in light of new learning are reframed
- Project design and its execution are reassessed

ReVISIONING

- Next steps are determined possibly leading to new or further enquiry
- Implications for projecting outward are probed—Personal transformations: Who am I in the world? Social Action: Who are we in the world?
- Reflective Action Process is renewed

Reflecting, in general, and the use of reflective questions, in particular, is a critical dimension within each phase of this model.

Taking RAP to the Classroom - an Example

Water, Water Everywhere and Not a Drop to Spare!

While water seemingly exists in abundance on the Earth (roughly 71% of the Earth's surface is covered in salt water oceans), clean, uncontaminated drinking water is a precious and disappearing resource. What can we do?

ReACTING:

- What do I already know about this topic?
- What do I know and understand about water?
- How do I, and my family, depend upon water? How do others?

ReSEARCHING:

- What is the current state of the problem?
- What are the primary causes of water pollution?
- If humans are the primary cause of the disappearance of healthy water, how can we become better stewards of this precious resource?
- Where can I go to find the most reliable information?

ReDESIGNING:

- What do I now know and understand about this topic that I didn't before?
- What patterns do I detect in the information I have gathered and what do they indicate?
- What are some conclusions I am beginning to draw about the role of humans as stewards of water?
- How can I most effectively design, represent, and communicate my ideas and actions to others? How would this look on a website?
- Who are the different audiences I should consider?

ReTHINKING:

- How does this help me understand and respond to other issues we face in the world today?
- Who might be effected by the solutions I propose and how?
- How successful was I in conducting this process? How adequate was my research?
- What dispositions did I demonstrate and what thinking processes did I use effectively?

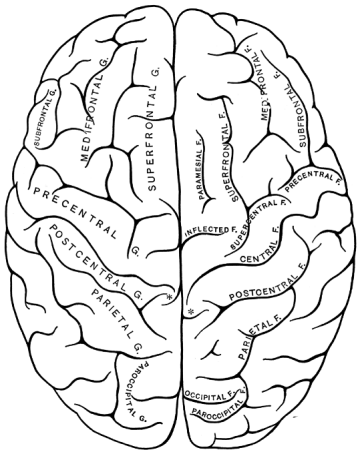
ReVISIONING:

- What do I now understand and believe about our individual and collective responsibilities in the world?
- What new areas of interest have I discovered in this process that I would want to "RAP" about?

Dispositions for Mindfulness Pathway and the Open Minds Model

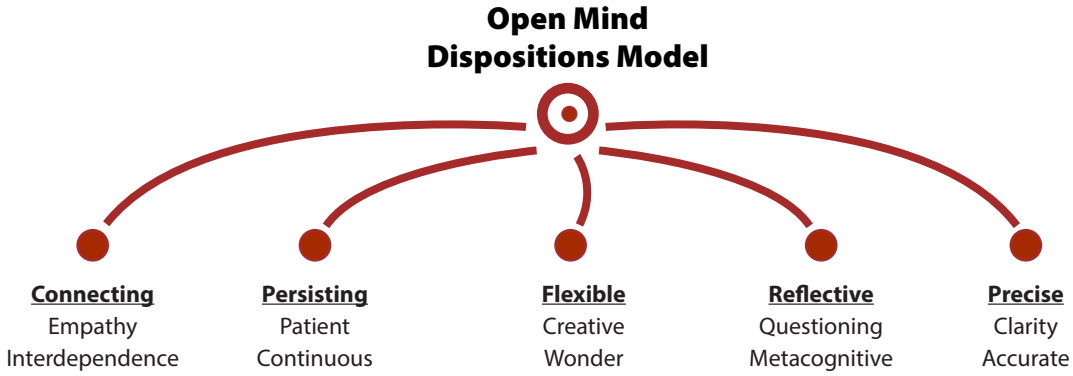
Overview

There is a long history of theory, research, and practical means for giving students a clear model for an often-elusive and ill-defined area of thinking: dispositions, or the characteristics of a high quality thinker. We know that habits of mind are important, but how do we in practical classroom settings, support students in being mindful of their own thinking while open to how other people think?

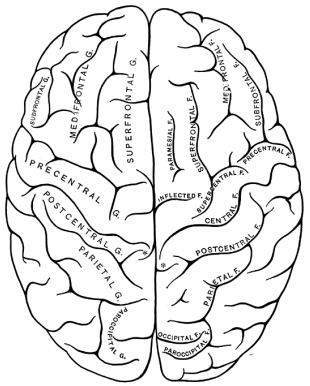


The dimension of dispositions is not to be construed as "character education" driven by any dominant cultural value system. This dimension of thinking is explicitly framed by the cognitive psychology research on how we as human beings, in general, approach and solve problems. From the earliest age, young children dynamically interact with the world around them. Some of these interactions are spontaneous or self-initiated while others are prompted by the adults with whom they come in contact. The responses children receive from their actions on the world further provoke (or inhibit) their curiosity and subsequent actions. Many of these actions, especially early in their growth, are governed by their physical ability to respond—the ability to see objects clearly, track their movements, grasp them and use their hands, fingers and feet voluntarily and in a coordinated manner. As control over their body increases other factors influence their responses—the amount and type of stimulation they experience, for example, and the nature of the adult responses to their actions. All of these factors play an important role in shaping children's orientation to the world and how they perceive themselves as agents of their own learning.

Teachers in classrooms, as well as parents at home, are concerned about how children may develop dispositions for engaging confidently and openly with any problem, content learning, complex cross-disciplinary concepts, challenges of college and the workplace, or life decisions they grapple with every day. We believe that the development of these critical learning dispositions can be directly facilitated and done so most effectively when children themselves become aware of the behaviors that help them succeed as learners.



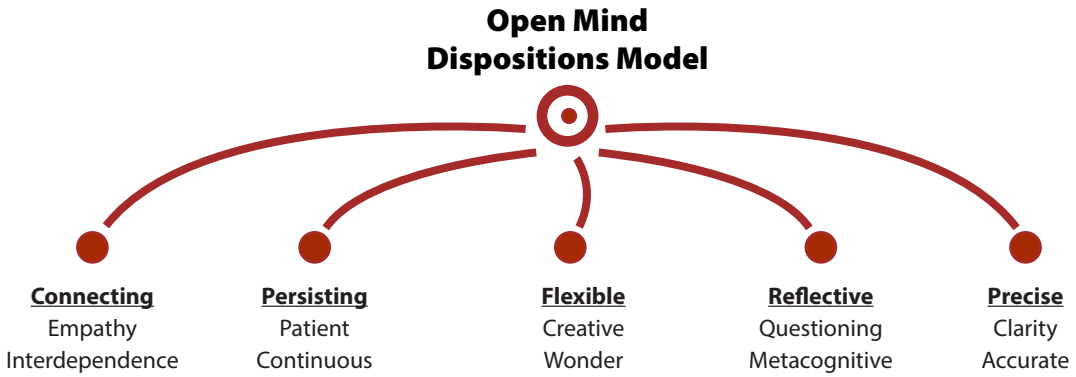
Dispositions for Mindfulness Pathway and the Open Mind Model



There are many different approaches to teaching for, of and about dispositions. Guy Claxton's identifies eight broad competencies: curious, courageous, exploratory, experimentation, imaginative, disciplined, social, and reflective. He suggests teachers should encourage these broad dispositions in order to engage powerful learners. Here is another list: Angela Maier's selection of broad areas for a school to use that she calls "Habitudes": imagination, curiosity, self-awareness, perseverance, courage, passion, and adaptability. The Costa-Kallick list of 16 "habits of mind" are used as reference points in classrooms in many schools. Many Thinking Schools have used the 16 Habits of Mind across their classrooms.

As our work has evolved, we have become more aware of the importance of student-centered models for thinking, rather than lists of processes, dispositions, or "skills". We have identified some key criteria we use for introducing a model of thinking to students that guides us to this question: Is the model fundamental, developmental, intuitive, teachable, transferrable, and integrated?

In a nutshell the important question is this: is the model "student" friendly? With this in mind, we created a synthesis model of dispositions based on the Costa-Kallick list of dispositions, Claxton's Key Competencies, and the Habitudes work. We called this synthesis the Open Mind model, as ultimately it is about keeping one's own mind reflective about internal dispositions and actions, while remaining open to other ways in which people are thinking and acting.



Dispositions for Mindfulness Pathway and the Open Mind Model

Open Minds Model

Within our view of offering student centered models, we have consolidated all of these many dispositions into 5 key ways of developing and sustaining an Open Mind. Here is a Thinking Point pattern showing how we grouped dispositions together. We also use simpler terminology that is easy to remember for students of any age. Here is a summary:

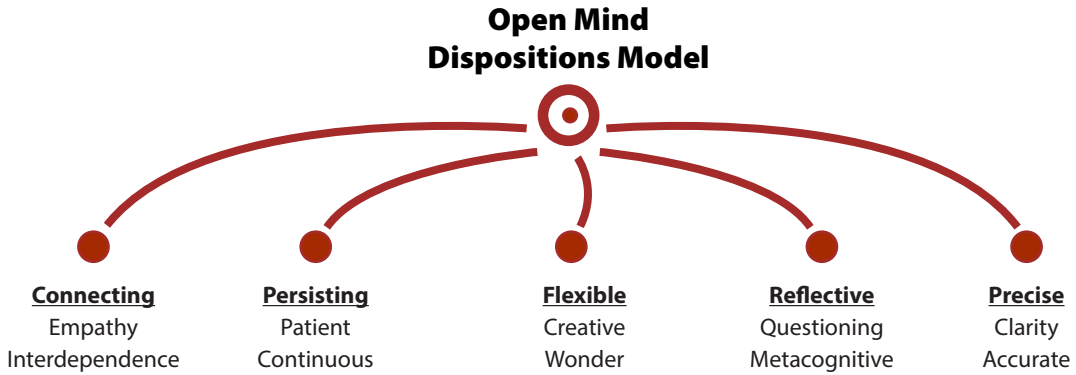
Connecting is keeping an open mind to how we "connect" with other people as well as with ideas. Connecting includes looking for interdependencies between people, including the development of empathy. It also means remaining open minded while connecting prior knowledge to new information.

Persisting is keeping an open mind by not giving up when faced with a difficult or long term problem or project. To persist is to engage patiently in tasks as well as staying open to new learning, rather than remaining stuck on your ideas.

Flexibility is keeping an open mind to different ways of seeing a problem and having a understanding of the generative, creative dimension of thinking, problem solving, and decisions with future effects. It is also meaning being open minded to a world that is ambiguous and full of unexpected events.

Reflecting is keeping an open mind to questioning and investigating your thinking. Metacognition involves looking at what you are thinking as well as how you are thinking. For example, a student may recognize that he or she is thinking about eating an apple (what) and also see that he or she is thinking using causes and effects reason about eating an apple (how)!

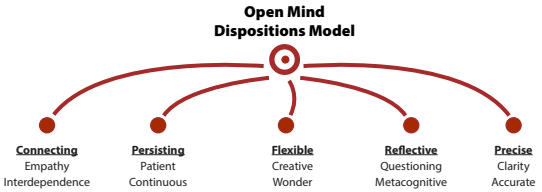
Precision is keeping an open mind about focusing while also being as accurate as possible when solving problems or completing work. This disposition is also about students being able to do systematic searches while drawing upon the environment around them.



Dispositions for Mindfulness Pathway and the Open Mind Model

Once the five Open Mind dispositions have been introduced learners can be asked:

- to identify ways in which they, historical figures, characters in stories, etc. have demonstrated these behaviors.
- to think about situations where each of the dispositions would be helpful
- to think about the nuances of these behaviors—when persistence becomes stubbornness, for example, and is counter productive.



It is important to help children understand the five Open Mind dispositions are interdependent and connected with fundemental thinking processes. As learners become more confident and skillful in applying their thinking processes they naturally demonstrate the ability to persist in solving problems and develop the flexibility to shift their thinking as the need to apply different thinking processes becomes evident to them.

Implementation of the Open Minds Model

The Open Mind model is designed for students to become fluent with the language, definition and transfer of each of the dispositions. This is where the additional professional development specific to this model is essential. One of our Global Trainers, Nick Symes, has been working in Malaysia with 10 showcase schools over many years. Now the work is expanding across literary thousands of schools. These schools had already implemented the Visual Tools for Thinking Pathway and were beginning to implement the Dispositions for Mindfulness Pathway. The need is clear: How does a school faculty systematically implement dispositions (which are internal and external mindset behaviors) across all the student population so that they students are fluent? Through high quality professional development, the school faculty is introduced to the model and processes for successfully transferring the Open Mind model to their students for their independent and skillful use.

Summary

It does not take long across a school to develop a new vocabulary for thinking behaviors and to show that, as a school, there is given great weight to these dispositions. However, It does take a commitment to professional development to ensure that teachers and school leaders fully understand the model and how to most effectively teach it to students for their independent use. Additionally, through the professional development activities, teachers and school leaders see how the different models can be used together. This creates a significant, evolutionary step in the journey toward becoming a Thinking School. As we move onto a third pathway, Questioning for Inquiry, and a new student centered model, you will begin to see that while each model has a power unto itself, it is elevated even more when used together with other models for thinking.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

The techniques for cooperative learning are many and there are models for establishing collaborative groups, classrooms and schools. The research on cooperative learning in school and the need for high quality collaborative groups in the work place connect to the recent evolution of social networking through new technologies as learners engage other learners around the globe. The following pages offer a brief introduction of strategies and methods used for:

- collaborative learning methods for students (and leaders with teachers)
- community building exercies
- collegial coaching for teachers

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Learning Methods

The concept of collaborative learning, the grouping and pairing of learners for the purpose of achieving a learning goal, has been widely researched and advocated - the term “collaborative learning” refers to an instruction method in which learners at various performance levels work together in small groups toward a common goal. The learners are responsible for one another’s learning as well as their own. Thus, the success of one learner helps other students to be successful. Proponents of collaborative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking.There is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than learners who work quietly as individuals. The shared learning gives learners an opportunity to engage in discussion, take responsibility for their own learning, and thus become critical thinkers.

Collaborative Learning is a relationship among learners 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).

Think-Pair-Share

- The instructor poses a question or topic, preferable one demanding analysis, evaluation, or synthesis, and gives students about a minute to think through an appropriate response. This “think-time” can be spent writing, also.
- Students then turn to a partner and share their responses.
- During the third step, student responses can be shared within a four-person learning team, within a larger group, or with an entire class during a follow-up discussion. The caliber of discussion is enhanced by this technique, and all students have an opportunity to learn by reflection and by verbalization.

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.

- Students form pairs; one student interviews the other.
- Students 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.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Learning Methods

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. Students 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 group spokespersons. Because no one knows which number the teacher 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 students 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 Visual Mapping

Using visual cognitive maps as a collaborative tool for thinking and understanding concepts, ideas and frames of reference.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Building Methods / Exercises

Mingle

The group mingles around, 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, 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

Participants face the inside of the circle on their individual spots. One person (start with the teacher modeling several times, then each student will do it once) will state something true about themselves. An example might be “I have taken ballet 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 Jamal, who is “It” and stands in the middle. Jamal 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. Jamal 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.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Building Methods / Exercises

Focus and Concentration 1

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 with their legs crossed, sitting up straight, and their hands in their laps. The students are modeled and asked to have their knees touching their neighbors knees to form a tight circle.

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 two elements are successfully combined, 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.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Building Methods / Exercises

Focus and Concentration 2

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.

Pass the Pulse
Everyone stands in a circle holding hands with their eyes closed. The leader is the generator of the pulse. The leader starts with passing the pulse by squeezing the hand of the person to their right or left. The person who just received the pulse is now the conductor and passes the pulse to the person on the other side by squeezing that person's hand. The pulse should travel around the circle a couple of times, with the leader passing it just like everyone else. When this pulse is traveling, you can send a new pulse. Then game ends when the leader progressively stop all of the pulses.

Pass the Motion
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. 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. If things get a bit too energetic, you can return to the original finger rolls.

Pass the Face
Everyone stands in a circle. Starting with the leader, they make a noiseless face to the person next to them. The second person mirrors the face back to the first person. Then, the second person turns from the first person melting away the mirrored face and making a new face as they face the third person. The third person mirrors the face of the second person. This continues around the circle. As the group improves, there should be no lag time between each passed movement.

Pass the Object
Everyone stands in a circle. The leaders begins with a single imaginary object. You establish, through physically modeling, what the object is. You then pass it to the person on your left (or right), who then continues passing it in the same direction.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Building Methods / Exercises

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 motion and sound. The leader selects another person to join the machine - this person adds another motion 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.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collaborative Building Methods / Exercises

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 would 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.

Collegial Coaching: Teachers Coaching Teachers

The Facilitators Coaching Facilitators model focuses on facilitators regularly observing each other to learn, understand, and improve their pedagogy (learning & presentation methods). The observed presentations are generally in the 15-40 minute range to provide a focus on particular segment of the Growing Thinking Schools training.

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 trainers.

Collaborative Learning Methods for the Active Learner Student Centered Classroom

Collegial Coaching: Teachers Coaching Teachers

The Teachers Coaching Teachers model focuses on teachers regularly observing each other to learn, understand, and improve their pedagogy (teaching methods). This model works best in groups 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.

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.

Systems Model: This model is equally effective with administrators coaching administrators; facilitators coaching facilitators.

Ongoing Development: Teachers regularly participant with the Collegial Coaching model throughout the school yea

Process

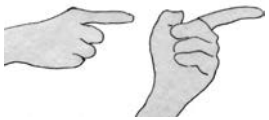
Briefing (deciding)
The participants are led through a storyboard (flow map) of the lesson to be observed. The person doing the lesson might have requests for the observation, and the observers should have a focus to observe.

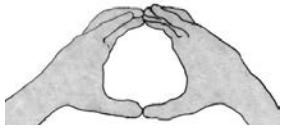
→

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

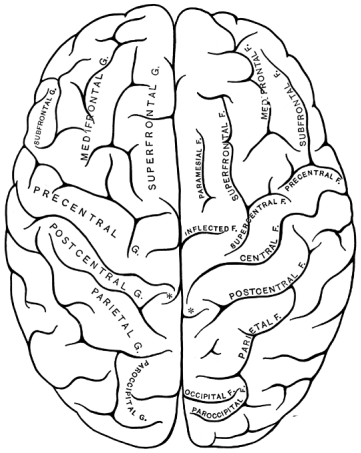
→

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





Thinking Friends® Early Childhood Model — What is Thinking Friends®?



Thinking Friends® is an approach to Early Childhood education for developing fundamental cognitive skills linked to early reading, meaning-making, and inquiry processes. Thinking Friends® are eight animal characters and a farmer, living life on a farm, with each animal having the personality, respectively, of a single fundamental thinking/cognitive skill (sequencing, defining, describing, cause and effect, comparing/contrasting, classifying, examining parts of objects/spatial reasoning, and using analogies) and style. As parents and teachers engage children with the Thinking Friends®, the children learn to identify, think about and skillfully apply their own thinking (metacognition) in all aspects of their lives.

Young children are first introduced to each of the characters through the stories. As the children become more familiar with the characters and their individual cognitive strengths and style, the stories become more complex. The "thinking friends" begin to think and work together to improve and expand their own thinking, content learning, problem solving and social-emotional approaches to building relationships. Along with the characters, the children learn to appreciate the complexity of ideas, the different perspectives that can be taken, the value of working cooperatively and the open-mindedness so vital to successful learning.

Young children also benefit from becoming aware of the ways in which they can direct their actions most effectively and productively. Learning to act reflectively, flexibly, precisely, persistently and interdependently can support successful learning in all aspects of a child's life. During the reading of the stories, concepts and behaviors can be reinforced through emphasis on key ideas as they are introduced. At the conclusion of the story, adults can guide children in continuing to build upon emotional connections and introduce meaningful practice with the type of thinking. This will help with retention of the idea, reinforce and strengthen the neural connections—and ultimately transfer it for use in other settings. Through modeling and practice children will develop the thinking skills and the key dispositions that are essential to successful learning--flexibility, precision, reflection, persistence and interdependence.

The primary goals of the Thinking Friends are:

- Children will become aware of the different thinking processes they and others use in their daily lives—specifically: sequencing, defining, classifying, describing, comparing, or examining analogies, causes and effects of events, and parts of whole objects
- Parents and teachers can assess children's cognitive strengths and needs
- Children become more purposeful and grounded in cognition/thinking rather than just on content
- Children will build early skills in mathematics and science concepts through the content of the stories
- Children will build early literacy in reading and making sense of stories and non-fiction text
- Children will be able to use their own frame of reference to explain the source of their knowledge, provide evidence for their ideas, and draw conclusions
- Children will develop an appreciation for the various perspectives of other people

Thinking Friends and the 3 Thinking Schools Models: Open Mind, Reflective Action Process, and Thinking Maps®

How children learn to approach and solve problems and how they develop the dispositions (also called 'habits of mind') for engaging confidently and openly with any challenge, content learning, and daily life decisions are concerns shared by teachers and parents. We believe that the development of these critical learning dispositions can be directly facilitated and done so most effectively when children themselves become aware of the behaviors that help them succeed as learners. It is important to help children understand that just like the eight thinking processes, the five Open Mind dispositions are interdependent and connected with the 8 thinking processes. Thinking Friends provide ongoing opportunities for children to learn about and apply the Open Mind dispositions to help them become successful learners. As children become more confident and skillful in applying their thinking processes they naturally demonstrate the ability to persist in solving problems and develop the flexibility to shift their thinking as the need to apply different thinking processes becomes evident to them.

The Thinking Friends® embody a predisposition to be curious and constantly demonstrate this through the questions they ask and the processes of discovery they pursue. You have probably already noticed how Farmer Framer prompts the thinking of the various characters with questions and how the characters themselves think aloud in response to these prompts and make new connections and discoveries. It is a primary intent of the Thinking Friends to provide models for young children that encourage their natural curiosity and help to develop and refine their inquiry skills.

The Friends also offer opportunities for children to learn about and apply the phases of the Reflective Action Process (RAP) model. As the children engage with the Thinking Friends in the introductory stories and through other books and experiences in the academic and social curriculum, the children, with your modeling and guidance, can be asked:

- to identify ways in which the different Thinking Friends have demonstrated the phases of the RAP model in the stories.
- to think about situations where the RAP strategies would be helpful to the characters and where they themselves or people (or other story characters) they know can ReAct, ReSearch, ReDesign, ReThink and ReVision to achieve their goals.
- to think about how the Thinking Friends, RAP and the Open Mind model work together.

It is important to help children understand that just like the eight thinking processes, the six phases of the RAP model are interdependent and connected with the 8 thinking processes and the Open Mind dispositions. As children become more confident and skillful in applying their thinking processes they naturally refine their ability to re-act to experiences with heightened curiosity, formulate interesting questions, and have the tools to develop the flexibility and persistence to apply their thinking in a focused manner in order to make new connections. We purposefully developed Thinking Friends to visually animate the thinking processes that children and people, in general, use all of the time. By creating cognitive avatars we hoped to provide young children with exciting and risk free ways to develop, explore and apply their fundamental thinking processes throughout all aspects of their developing lives. These Thinking Friends can become the sidekicks that support and coax children to deeper exploration and understanding of the world in which they live and imagine.

As the children become familiar with the Thinking Maps® and engage with the Thinking Friends in the introductory stories and through other books and experiences in the academic and social curriculum, the children, with your modeling and guidance, can be asked:

- to identify ways in which Thinking Maps® might be used by the different Thinking Friends to show their thinking.
- to think about other situations where the Thinking Maps® would be helpful to the characters and where they themselves or people (or other story characters) they know could use Thinking Maps® to show their thinking in order to achieve their goals.
- to think about how the Thinking Friends, RAP, the Open Mind model, and Thinking Maps® work together.

Bringing the Models Together

Once again, it is important to help children understand that just as with the eight thinking processes, the five phases of the RAP model, and the five Open Mind dispositions, the Thinking Maps® are interdependent and connected with each of these models. Students who develop fluency with the Thinking Friends, Open Mind, RAP and Thinking Maps® models, have "go to" processes for pursuing their questions and thinking through any problem. Through consistent and sustained practice and with explicit modeling by you, children will be able to slowly integrate all the models together. This is one of the intended outcomes of our work in developing Thinking Schools: students will become fluent with different models of thinking and can apply and transfer these models in a dynamic way to learning any content or taking on rich performance tasks, and for improving their overall thinking abilities.

As student are independently using Thinking Friends, they may also be using the RAP model, Thinking Maps® and Open Mind together:

- Students using Thinking Friends and Thinking Maps® see the Friends working together and create visual representations of their thinking. They begin "connecting" ideas visually. In the process, they naturally develop an understanding of the interdependency of ideas in content areas and with their peers in cooperative groups;
- Students become more persistent because they see the Thinking Friends solving problems and have visual tools for pursuing ideas when they feel stuck during the reflective action process;
- When using Thinking Friends and Thinking Maps® students become more flexible in how they see different patterns of thinking in content information and as they speak and write about their own ideas;
- Students also become much more reflective as they listen to the Thinking Friends explain their thinking, imagine themselves as the Thinking Friends, and are able to look down on the Thinking Points and see a visual representation of the patterns of their own thinking; and,
- Students who are visually mapping their thinking patterns are more precise because they begin to see the holes in their thinking and have ways of showing details that support more general ideas.

It is often said that the greatest gift we can give our children is roots and wings. For our children to soar and thrive throughout their lives, having confidence in their abilities as skillful, mindful, and compassionate thinkers and problem solvers is essential to a fulfilling life journey.

Introduction of Individual Characters

Below are the basic definitions of each of the eight Thinking Friends and their respective, primary cognitive strength. But before introducing each Friend, here is their thinking "guide" on the farm, Farmer Framer.

Farmer Framer—His cognitive/thinking contribution to the stories is always reflective (or metacognitive) and thinking about the big picture. He FRAMES problems and examines PERSPECTIVE TAKING. Farmer Framer surveys the perimeter of the barnyard "framing" the topic/issue/problem under consideration in a story or script. He helps the Thinking Friends to identify how they know what they know, to surface the factors that influence their ideas, and to formulate conclusions and insights from their experiences.

Snakey Sequencer— His cognitive/thinking strength is SEQUENCING. Snakey puts things in order and focuses on the sequencing of ideas, things, numbers, alphabet, and events.

Doggie Definer— His cognitive/thinking strength is DEFINING and UNDERSTANDING CONTEXT. Doggie focuses on defining and understanding a given situation or context. He brainstorms everything he knows about a concept or the questions that he would like to find the answers to about it.

Chicky Comparer— Her cognitive/thinking strength is COMPARING AND CONTRASTING the similarities and differences between different people, animals, places and things.

Cowsie Cows N Effect— Her cognitive/thinking strength is EXAMINING CAUSE AND EFFECT. She examines the causes and effects of actions and events.

Donkey Describer—His cognitive/thinking strength is DESCRIBING. He uses adjectives and 5 senses to describe the attributes and qualities of people, places and things.

Kitty Categories— Her cognitive/thinking strength is CATEGORIZING. She categorizes or groups together ideas, things, events, experiences, and animals.

Pony Parter— Her cognitive/thinking strength is examining PARTS OF WHOLE OBJECTS and considering how objects fit in space.

Rooster Relationships— His cognitive/thinking strength is examining ANALOGIES or seeing relationships between and among ideas and things—that is, he helps to identify the relationship that connects different ideas to each other thereby expanding the meaning of those ideas.

Glossary

Cognitive Processes Dimension a hierarchy of six types of thinking which become increasingly complex and demanding

Collaborative Networking between us in pairs, groups, schools, and global networks

Creativity Dimension the capacities to think creatively about any subject matter, idea, or concept

Developing Dispositions characteristics, dispositions, and habits of mind are engaged

Dispositions Dimension may be understood as part of the "affective domain" and also as essential threads woven through the tapestry of a Thinking School

Enquiry Dimension thinking together, exploring new possibilities, and bringing together a collective wisdom about an idea or concept

Learning Modalities Dimension a range of abstract to concrete, and global to detail oriented ways of learning

Reflective Questioning high quality questioning and listening skills

Structuring Environment considering how the physical space is organize and resources used

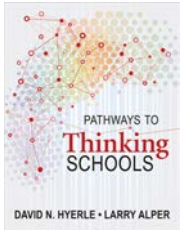
Systems Thinking a field of study of how causes and effects in a system interrelate and create feedback loops

Thinking Skills explicit use of cognitive processes

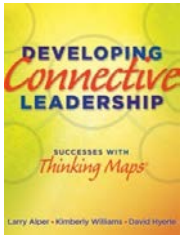
Visual Mapping the use of visual tools to map out ideas

Index

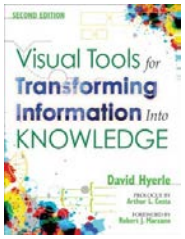
Resources



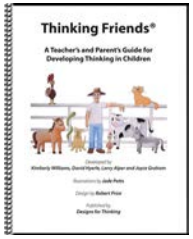
Pathways to Thinking Schools • *David Hyerle and Larry Alper coeditors, Corwin Press, 280 pages, April 2014*
Content-focused teaching may yield marginal improvements in test scores, but leaves students without the cognitive skills and dispositions for success in an information-overloaded world that requires deep thinking, collaborative problem solving, and emotional intelligence. In this book, David Hyerle presents case studies of schools and educators who have applied these models, in some cases system-wide, to ensure every student can thrive in an increasingly complex future. Chapter 11 is about the Growing Thinking Schools Ethiopia project co-written by the Thinking Schools International global trainer and the Ethiopian trainers respective perspectives.



Developing Connective Leadership Successes With Thinking Maps® • *Larry Alper, David Hyerle, Kimberly Williams, Authors*
Developing Connective Leadership shows you how Thinking Maps® are an efficient and eloquent language that can be used to explore and reveal ideas, thought processes, and intentions. By creating visual representations of thought, leaders create shared understandings and foster connections among staff. Explore how schools have used the Thinking Maps® process to create strong collaborative bonds and facilitate shared leadership. As staff members collaborate to construct a shared frame of reference, they are empowered to execute and sustain the school's vision.



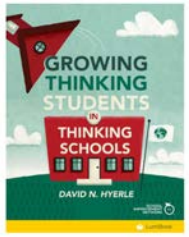
Visual Tools for Transforming Information Into Knowledge • *David Hyerle, Author •Corwin Press, 2009, Second Edition, 192 pages*
This is the most comprehensive book on graphic organizers, Thinking Maps®, and graphic software programs. Find out why visual tools and mapping are the key tools for 21st century learning. Look at student and teacher work and review test results from around the country. In a rich and provocative writing style, David Hyerle, Ed.D. draws together examples from teachers, administrators, brain researchers, and parents to make a very exciting read.



The Thinking Friends® Teacher's and Parent's Guide for Developing Thinking in Children • *http://dft.designsforthinking.com/thinkingfriends/*
Young children are first introduced to each of the characters through the stories. As the children become more familiar with the characters and their individual cognitive strengths and style,the stories become more complex. The "thinking friends" begin to think and work together to improve and expand their own thinking, content learning, problem solving and social-emotional approaches to building relationships. Along with the characters, the children learn to appreciate the complexity of ideas, the different perspectives that can be taken, the value of working cooperatively and the open-mindedness so vital to successful learning.

Structuring Thinking Environments • *Robert Price, Author • www.thinkingenvironments.com*
Thinking Environments, a professional development model, is an awareness, understanding and a process focused upon the design, interface and impact with the environment of the physical learning space and the materials in the environment —respecting and understanding how children see, sense, use and interface within the environment space The teacher makes environment decisions with intentionality — impacting the classroom and school's environment that are crucial to the quality outcomes of the children and youth's learning experiences.

Resources



Growing Thinking Students in Thinking Schools • *David Hyerle, author* • *School Improvement Network, 2015* • *www.pd360.com*
Interactive book (online and/or local network and/or DVD) that is built around three principles:

- all learners have innate abilities to think in a variety of ways.
- creating a connection between students' thinking processes and the content we teach is critical.
- to improve thinking processes, we need student-centered models

Thinking Schools Ethiopia • www.thinkingschoolsethiopia.com
This website and blog is an ongoing narrative of the Growing Thinking Schools Inside Out project in Ethiopia. The webite includes documentation, video, illustrations, still photos and more documenting Thinking Schools Ethiopia and Thinking Schools International.

Thinking Foundation • www.thinkingfoundation.org
The mission of the non-profit Thinking Foundation is to support high quality research on cognitive skills development, creativity, and critical reflection—at pre-school, K-12 and college levels in order to transform learning, literacy, teaching and leadership around the world for those with the greatest need. The Thinking Foundation website includes the Thinking Schools accreditation process, extensive research and cases studies on the use of visual tools and other thinking methods that are part of Thinking Schools Ethiopia.

Thinking Schools International • www.thinkingschoolsinternational.com
This website includes information on the Thinking Schools process, information and links to many global Thinking Schools projects, and case studies.

Eminence Social Entrepreneurs • www.eminence-se.com
This website provides an overview of Eminence Social Entrepreneurs who is the collaborative organizaiton in Ethiopia for Thinking Schools Ethiopia.

Robert Seth Price - Senior Global Trainer • www.eggplant.org
This website provides information on the TSI Global Trainer who initiated and collaborates with the Thinking Schools Ethiopia project.

David Hyerle - Co-Director of Thinking Schools Ethiopia; Founder Thinking Foundation
www.thinkingschoolsinternational.org • www.thinkingfoundation.org

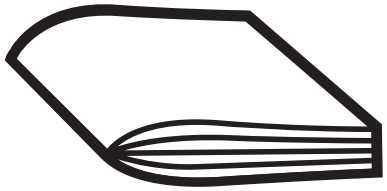
Thinking Schools International

Thinking Schools International ™

Working Field Guide

a reflective journal for personal and collaborative thinking

developed and designed by Robert Seth Price



for student and adult thinkers

www.thinkingschoolsinternational.com

Working Field Guide
Thinking Schools International, LLC

Our Purpose

Thinking Schools International, LLC is a company focused on facilitating expertise within schools, school systems, and across regions and countries for transforming the practice of education toward the collaborative development of a wide range of thinking processes of all members of learning organizations.

Our Process

Thinking Schools International, LLC conducts direct training with individual learning organizations, certifies trainers at different levels of expertise, while also welcoming other organizations to engage with us in licensing agreements for using these materials and processes around the world.

Thinking Schools International

Contact Info

For information about training, training of trainers, and the expansion of the Thinking Schools design in your area, please contact: Richard Cummins, CEO Thinking Schools International, LLC, Swindon, England.

Website

Please visit our website for information about upcoming training opportunities, research and documentation on different approaches to the facilitation of thinking, and for documentation and research on Thinking Schools around the world. There are links to leaders in the field of the development of thinking and learning. If your learning organization is working with us over time, you will be given access to an online collaborative network of educators from around the world who are sharing their experiences and new strategies, insights, and outcomes.

www.thinkingschoolsinternational.com

How to use the Working Field Guide

Using the Working Field Guide

The *Working Field Guide* is like a journal that you might take along on your journey for writing down your ideas. In this case, you will be collaboratively mapping out your ideas and reflecting on uses of thinking tools, techniques and strategies with your colleagues. It is a place for you to be creative, to capture ideas, and for reference as you move forward.

Expanding the Working Field Guide

The provided *Working Field Guide* is a foundation to expanding the field guide with pages that reflects your school visions, needs and culture for depth of understanding. Further development of the *Working Field Guide* for and by the staff strengthens the understanding of the potential with personal and collaborative reflections.

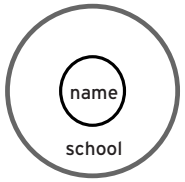
Creating a Field Guide for your Students

This *Working Field Guide* is also a purposeful model for what we suggest you try out with your students. When students have a place to keep track of new ways of thinking they will engage in a reflective process, as you have, in investigating and improving their ability to use new thinking processes over time. We hope you create your own Field Guide design for students that is unique and appropriate for your environment and that reflects the vision your school has taken on for becoming a community focused on the development of every child's abilities to think in many different ways... and to improve their abilities to investigate how to integrate these different approaches as they mature.

Circle Map with Frame of Reference

Understanding your school and community

1 What is your name?



2 Identify as many important things that you would say about your school to someone who has never been there?

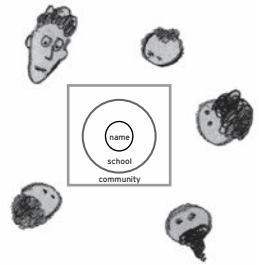
3 Every community has its own character. Write down the most important things about the wider neighborhood and community that surrounds your school in the Frame of Reference.

Circle Maps • Understanding your School and Community

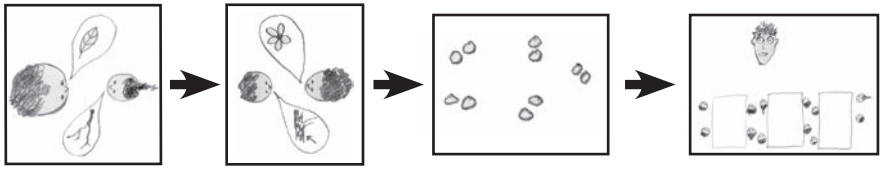
After you and a partner have completed your visual mapping, first pair up together and share your ideas with a Think-Pair-Share, then second get together in a small group and share your ideas with a collaborative Context Circle. Use the questions below:

What are some of the similar and different types of information in the maps?

We will then share the most important information in a group map.



Think-Pair-Share in the classroom



teacher models with a student

two students model

pair up students

whole group sharing

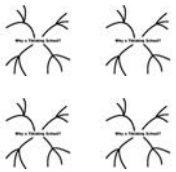
Mind Maps: Collaborative Networking of Ideas

Why a Thinking School?

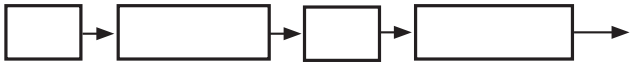
Why would we want to begin a transformation of our school toward becoming a Thinking School?

Pair with a person sharing common and new ideas.

Ask about each others ideas.*



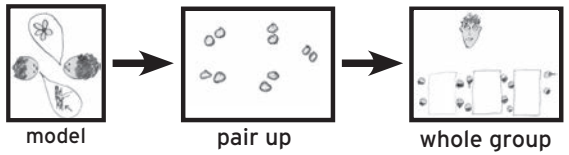
Pair with another pair to share your visual Mind Maps. Select and priortize 3-4 of the most important ideas in a sequential flow map.



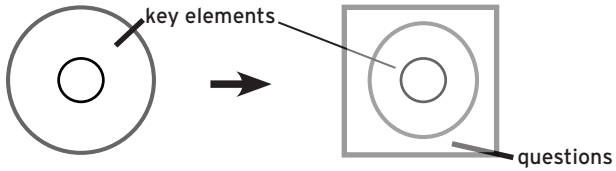
* How are you thinking about the idea? Please tell me more.

For, Of and About Thinking

Think–Pair–Share
Each area of Thinking Development



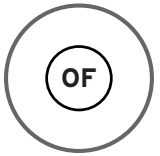
Visual Mapping
Each area of Thinking Development



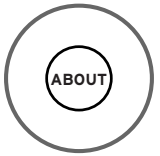
1 **2**

Teaching FOR Thinking
Creating school-wide and classroom conditions that support thinking development.

Teaching OF Thinking
Instructing students in the skills and strategies of thinking directly and/or implementing thinking programs.



Teaching ABOUT Thinking
Helping students become aware of their own and others' thinking processes and use in real-life situations and problems

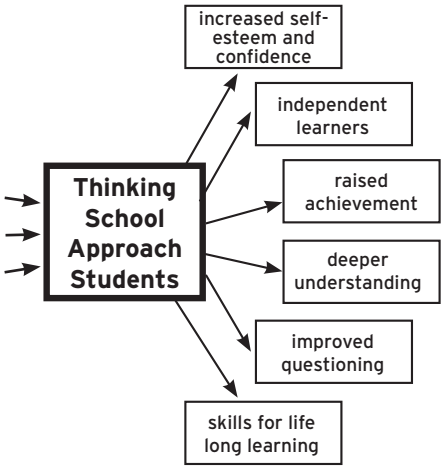


Prioritizing
How would you prioritize For, Of and AboutThinking

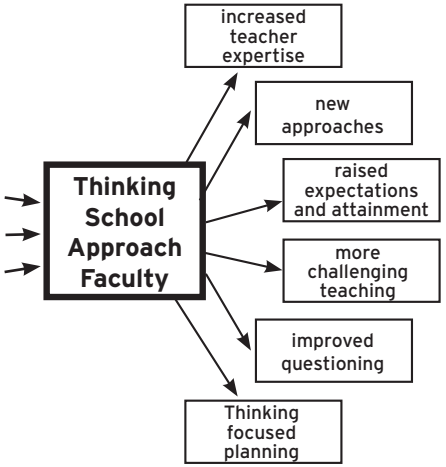
Becoming a Thinking School

What are the inputs?

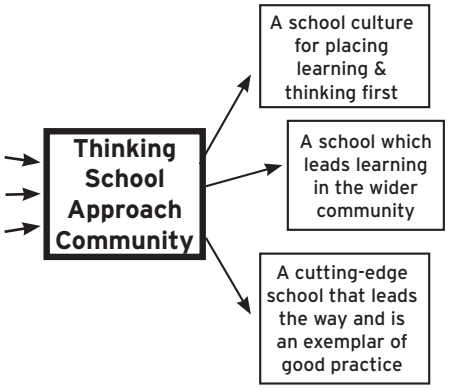
What are the inputs of this process to make a difference for STUDENTS?



What are the inputs of this process to make a difference for the FACULTY and SENIOR MANAGEMENT team?



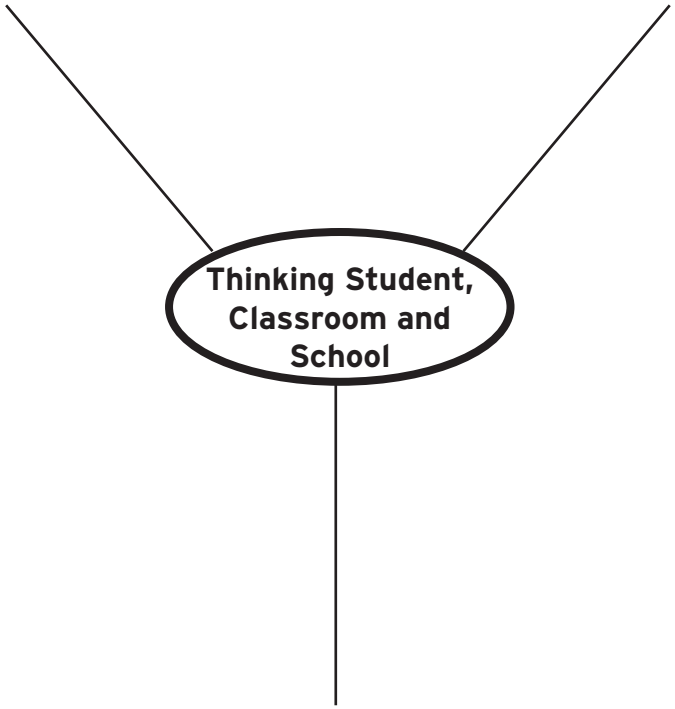
What are the inputs of this process to make a difference for the WHOLE SCHOOL?



Thinking Student, Classroom and School

Why a Thinking School?

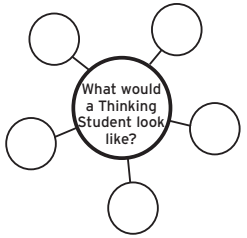
1) What would a Thinking Student look like?



2) How would it look if students were thinking together?

3) How would it feel for students to be focused on thinking processes?

1



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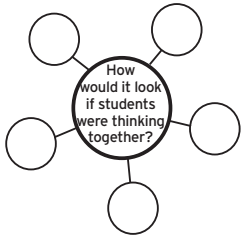

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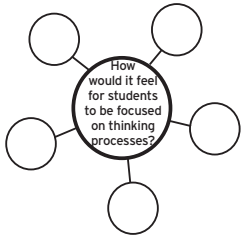
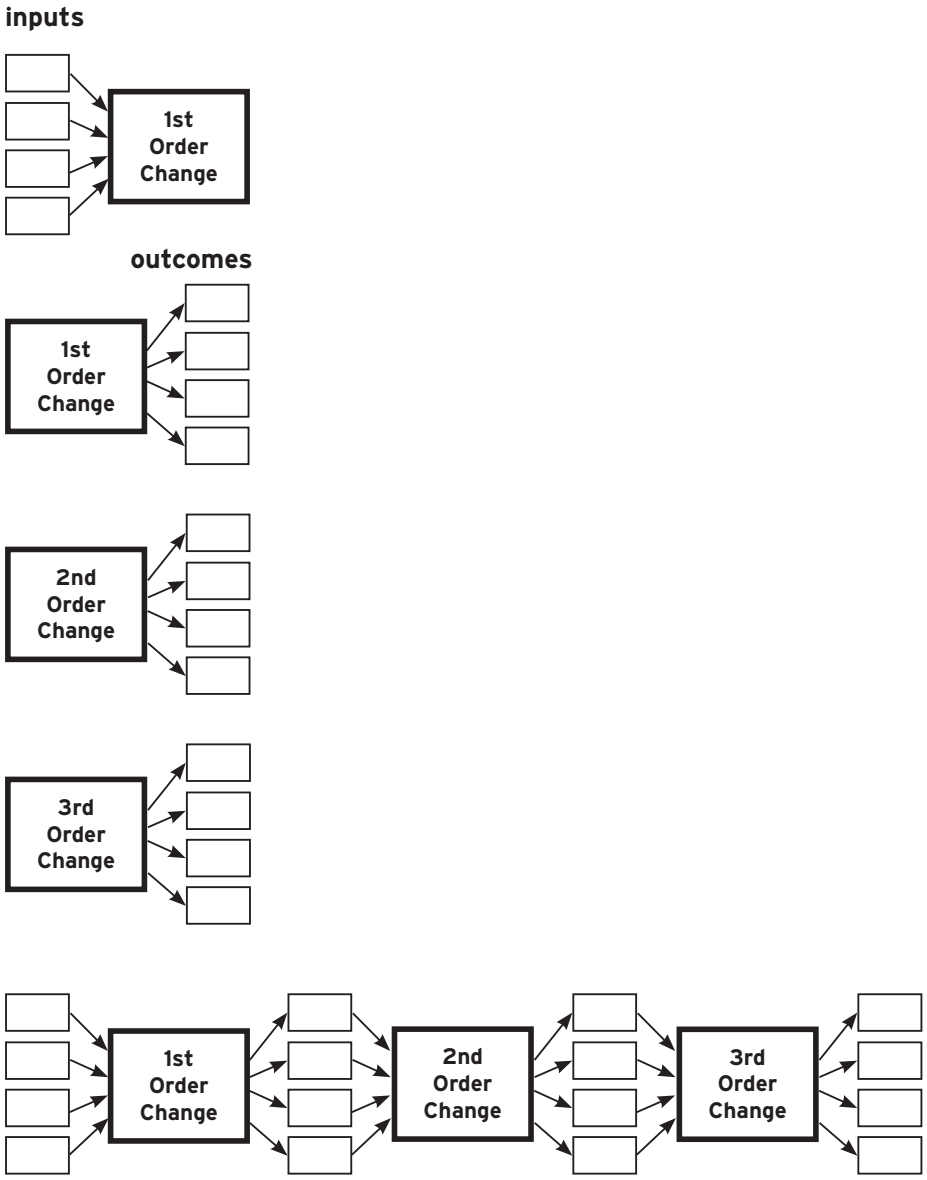


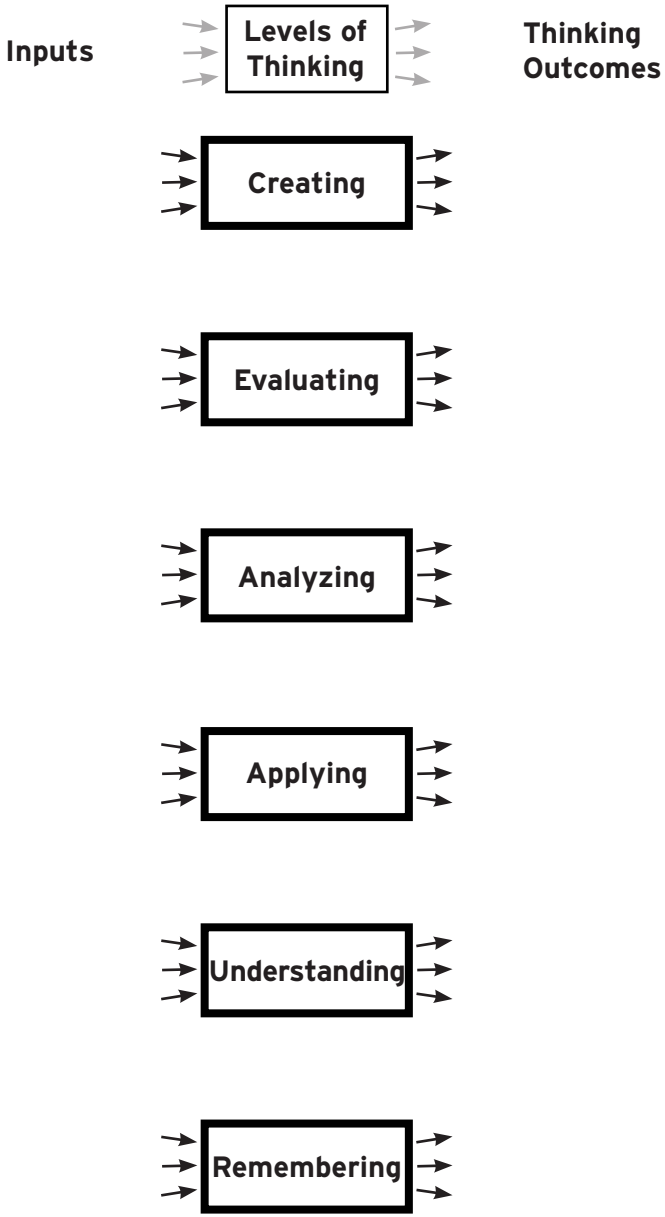
Orders of Change

How does change happen in your school and community



Cognitive Processes Dimension

Benjamin Bloom's Taxonomy of Educational Objectives
(revised by Anderson)



Enquiry Dimension

Reflective Questions

Types of Reflective Questions

Factual (Knowledge) - 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.

1

Use a Visual Tool(s) to discuss the different types of reflective questions.

2

What is the teacher's role with Reflective Questions? The students?

3

What collaborative learning methods can be used with Reflective Questions? How?

Dispositions Dimension

Habits of Mind

1 Select a Habit of Mind (HOM) and sketch what it looks like.

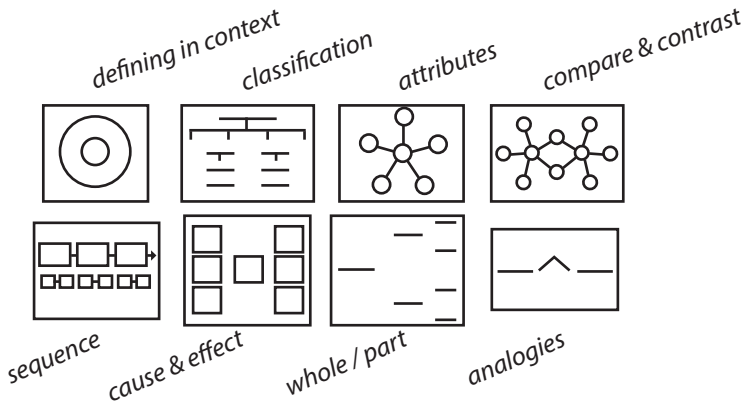
2 On the outside circle write your questions you have in regards to this Habit of Mind.

3 What are the inputs and outcomes of implementing Habits of Mind.

Visual Tools Dimension

Organizing Thinking

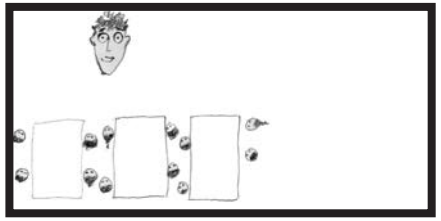
How does the design and physical nature of the individual Thinking Maps® support our understanding of each cognitive process? Use visual tools to organize your thinking.



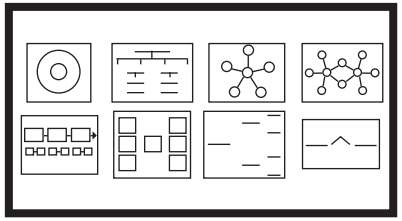
Visual Tools Dimension

Organizing Thinking

Consider the Thinking Maps® as a visual language to communicate ideas, thinking, and understanding. Draw and/or write your thoughts using a Thinking Map.



Which Thinking Map would you use to organize your thinking about _____?

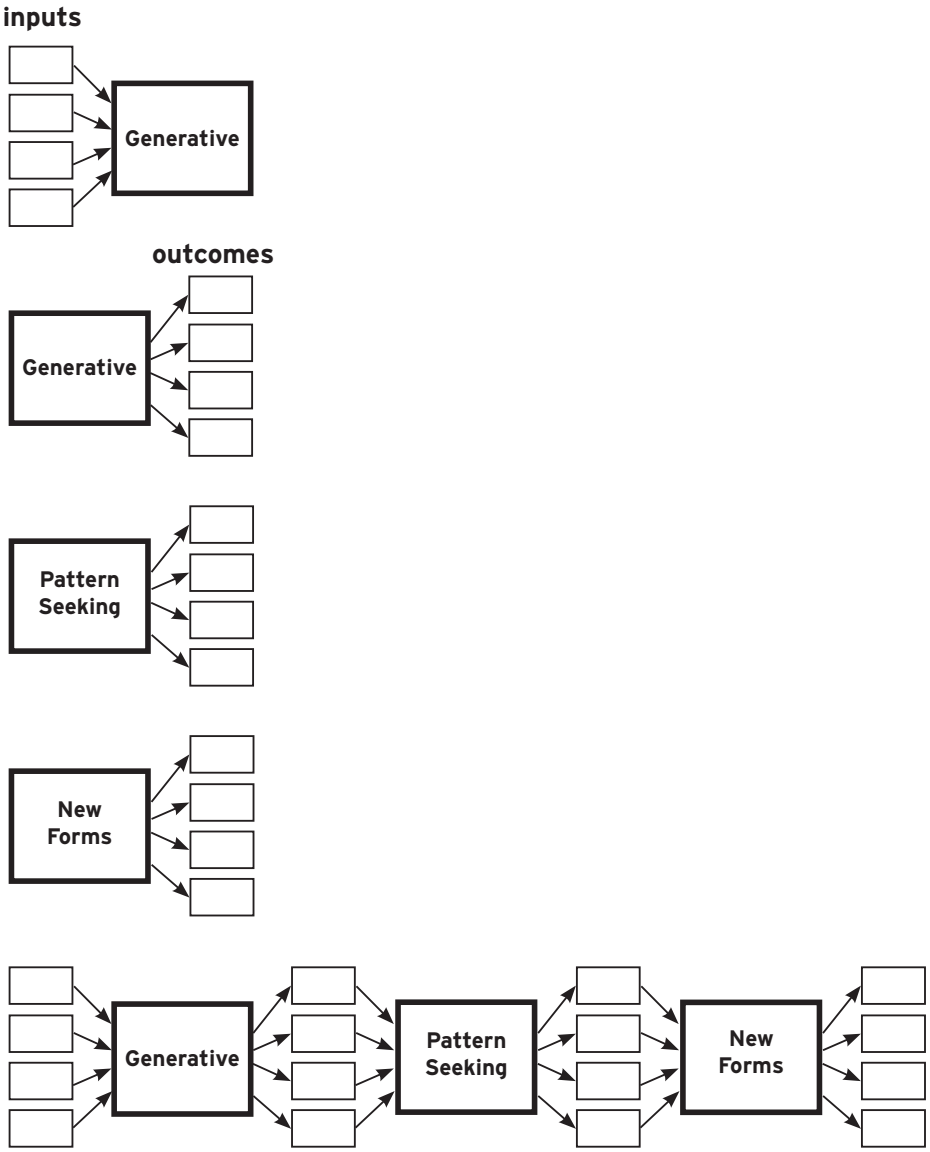


Select a Thinking Map that represents how you are organizing your thinking.

Participants share how they organized their thinking with their selected map (cognitive process).

Creativity Dimension

Inside the Box and Outside the Box



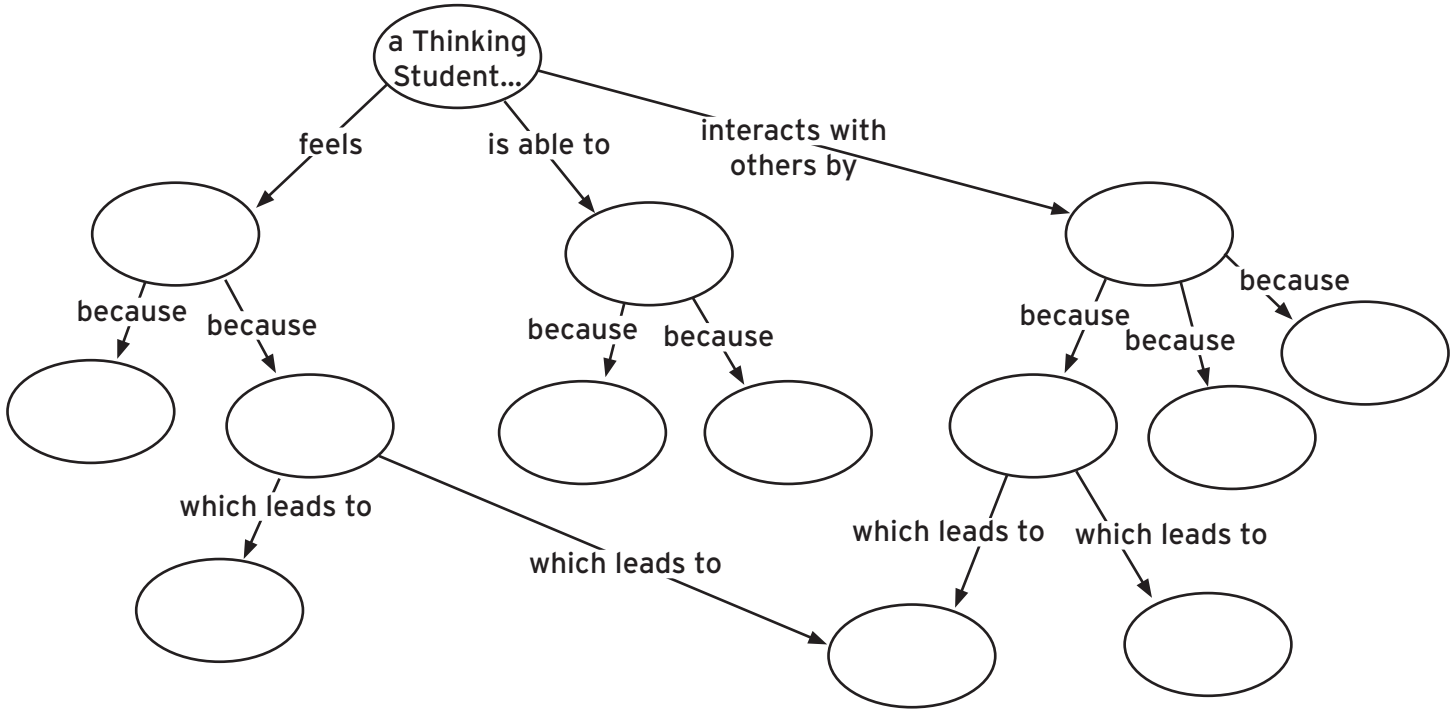
Depth and Complexity

Thinking in Depth

1 Select a Depth and Complexity (DOC) and sketch what it looks like.

2 On the outside circle write your questions you have in regards to this Depth and Complexity.

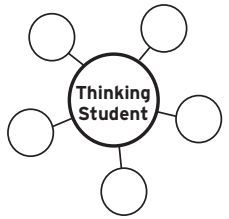
3 What are the inputs and outcomes implementing a specific Depth and Complexity?


a Thinking Student...
feels
is able to
interacts with others by
because
because
because
because
because
because
because
which leads to
which leads to
which leads to
which leads to

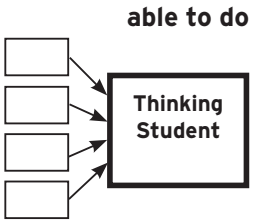
Thinking about Thinking

Reflections

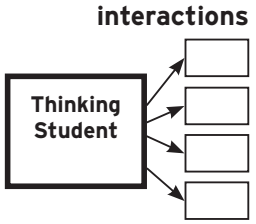
What are the qualities of a Thinking Student?

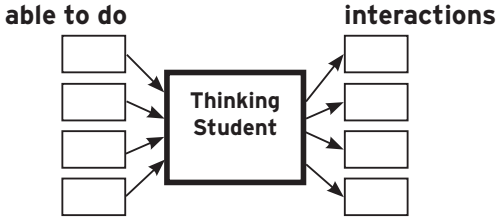


What is a thinking student able to do?



How does a thinking student interact with others?





Priorities

Reflecting on the Journey

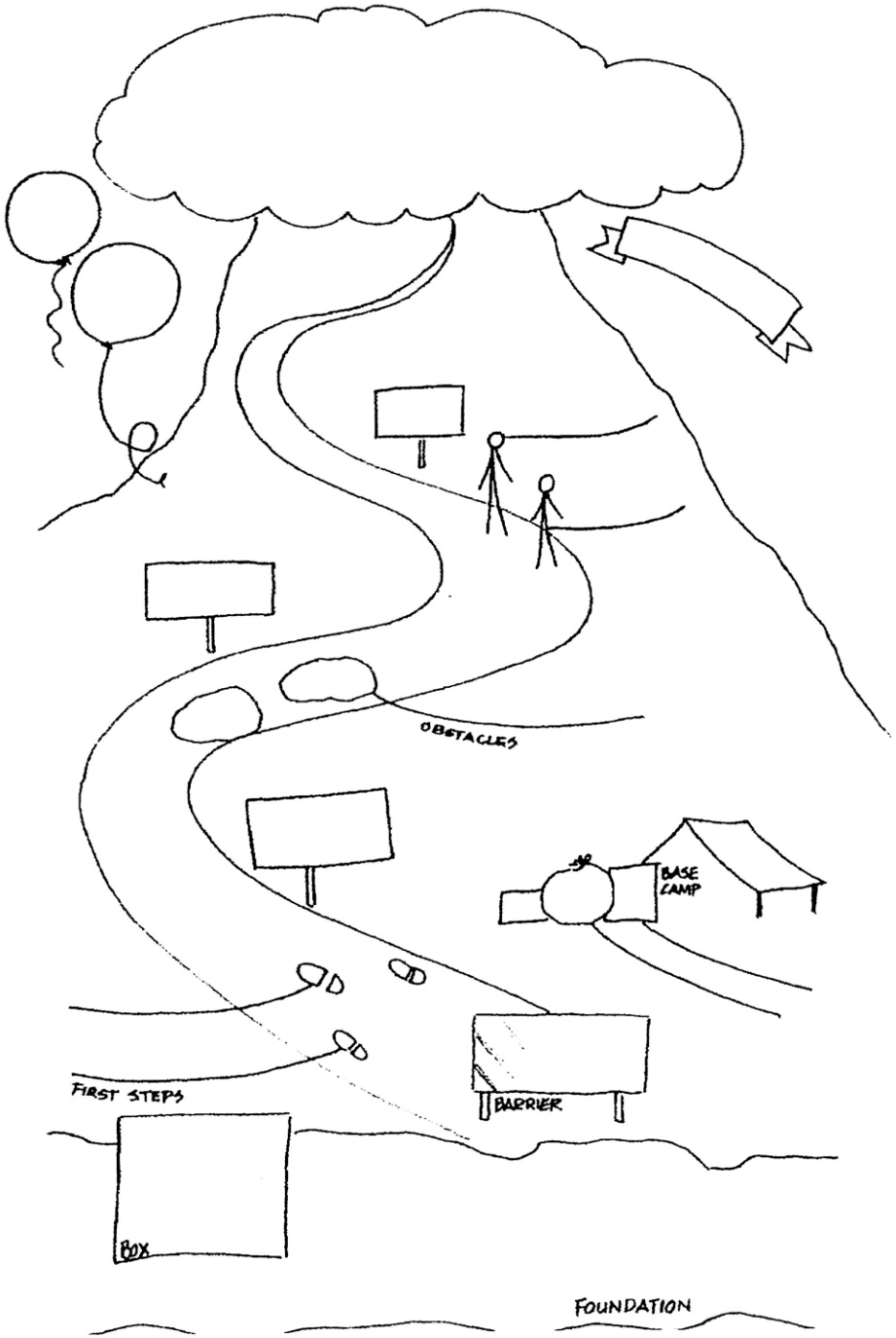
1 On small pieces of paper in the circle write the priorities of change at your school.

2 Sequence the priorities of change in the order that you think change will happen.

3 On the outside circle write how do you know if change occurs at each stage.

Mindscaping Overview

Planning the Journey



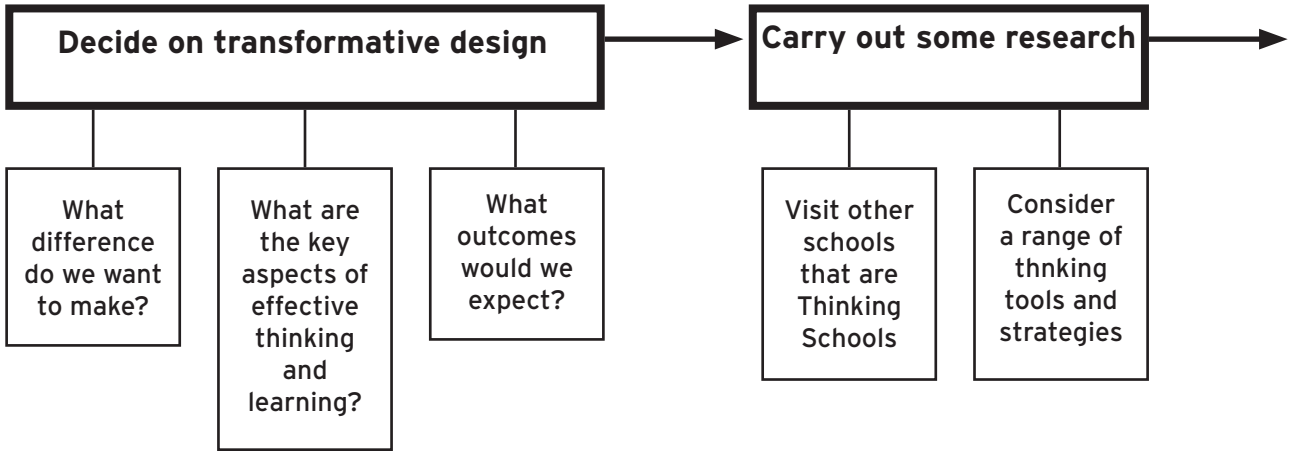
Planning the Journey

What are the transformative design steps for success?

Journey

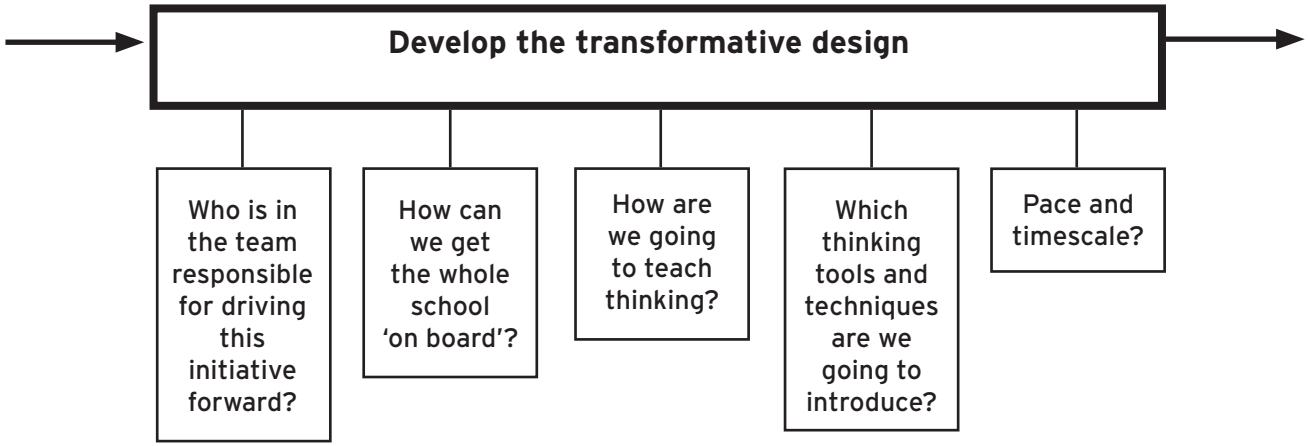
Here are the types of the questions we may ask:

- What are the best ways to approach the teaching of thinking for YOUR school?
- What do you think is involved in a whole school approach?
- What transformational steps are necessary for success?
- How far are you along in this process already?
- How will you build consistency through a developmental planning process?
- Are there clear timelines and actions for training, monitoring and sustaining the plan?



Planning the Journey

What are the transformative design steps for success



PMI (Plus-Minus-Interesting) Guide

Reflections

Plus	Minus	Interesting

What further Thinking Schools Professional Development would you like?

Leading the Way

Transformative Design: Change Model