Timeless Teaching

Scott Flox, Cally Flox, Debora Escalante

Timeless Teaching

Creating a Classroom Culture for Curious, Creative, Critical Thinkers

Flox, S. , Flox, C. , & Escalante, D.

This book explores the evolving challenges and opportunities within the education system through the experiences of a seasoned educator. It reflects on the tension between innovation and compliance in schools, revealing how rigid structures can suppress creativity and limit student growth. Through practical insights and proven strategies, the book encourages educators to inspire and transform their students by embracing creativity and personalized learning, demonstrating how these timeless principles can empower both teachers and students to thrive in an increasingly complex world.

Effective Teaching | Teaching

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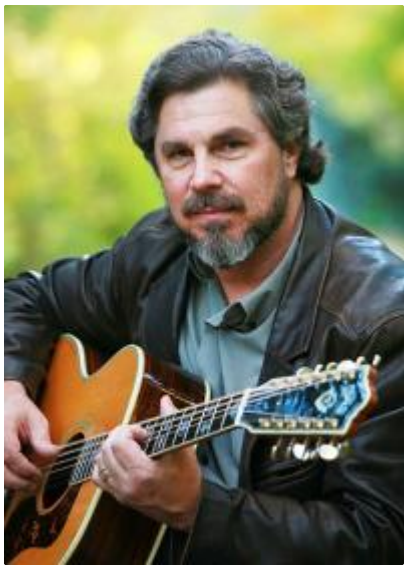


Scott Flox

Scott Flox is a reading and visual arts specialist who taught first-grade for 4 decades in districts and charter schools. He has taught in inner cities, rural areas and the suburbs to refine engaging techniques for all children. Scott integrates visual art, music and drama daily into his classroom. He has a gifted and talented endorsement and a visual arts endorsement. His visual arts instruction fully integrates with effective literacy instruction. His early training with Madeline Hunter at the UCLA lab school has provided him a developmental approach to teaching in all his work. Scott is a primary presenter for professional development programs in the BYU ARTS Partnership and the UVU Arts Engage Series. He has been recognized as Jordan District Outstanding Teacher of the Year, Jordan District Outstanding Arts Teacher of the year and awarded the Beverley Taylor Sorenson Outstanding Arts Integrated Teaching. Jordan Credit Union Teacher of the Year and was selected for the KSL teacher feature. Scott has coached baseball, basketball and track in school and community programs. As an accomplished finger style guitarist, he teaches guitar and performs locally. As a teaching artist on the Utah Division of Arts and Museums artist roster, Scott provides workshops and

residencies in schools. He is married and raised seven children and his dog Scooter keeps him out of trouble.

Cally Flox

Brigham Young University

Cally Flox is the founding director of the BYU ARTS Partnership working to increase the quality and quantity of arts education within the BYU Public School Partnership. Since 2005, she has convened partners to create and present professional development programs. Her team has produced myriad open-source materials for teachers and principals. With a bachelor's degree from Utah State University, she taught dance and math in K-12 schools. She is a licensed administrator with a master's degree in Educational Leadership from BYU. Cally taught dance and creative development for people of all ages and completed additional training in sensory integration, and the neurophysiology of learning. She is a co-author of the book A Teachers' Guide to Resiliency Through the Arts and

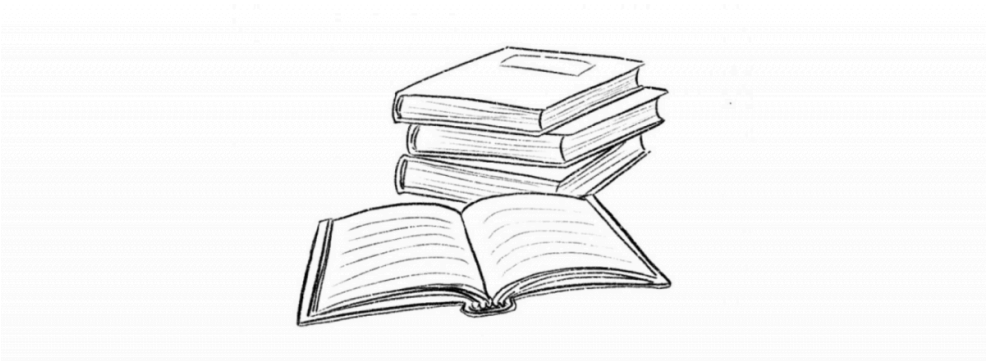
has presented both as a keynote speaker and workshop provider for children and adults, both nationally and internationally. She is a past president of the Utah Dance Education Organization and serves on both the Utah and National board for Dance and the Child International. Married to Scott Flox, she has 4 children, 3 step children, 4 grand children with one on the way.

Deborah Escalante

Debora Escalante is a retired Associate Professor and Director of Graduate Studies in the School of Education at Utah Valley

University. She earned her Ph.D. in Instructional Design at Utah state University and completed a B.A. and M.A. in Theatre at Brigham Young University. Her research focuses on the development of models for K-12 curriculum correlation and integration, and elementary arts integration. Deb is an accomplished theater director, storyteller, vocalist and actor performing in many community events. She is the mother of 5 and has 9 grandchildren.

Why This Book Was Written



A personal message from Scott Flox: *In 1978, the year after I graduated from college, Proposition 13 reduced the funding of California schools by 57% compromising the security of teaching jobs. With a young family, I sought security elsewhere. I moved from the perpetual sunshine and city conveniences of Los Angeles to a farming community in Montpelier, Idaho where I saw snow for the first time. The kids brought me fresh eggs and we played football at recess in below-zero temperatures.*

When I started teaching in Idaho, I earned 9.5K per year. With my young family, I qualified for government subsidized housing and food stamps. Over the years, I taught guitar and visual art outside of school to make ends meet. When I moved to Utah, I chose the school district that asked for innovation. In my interview, they asked how I was different from other people. They gave me a concept and I described how I would teach it. Teachers were rewarded for innovative solutions that improved the quality of instruction. I knew the pay was low, but I enjoyed my work and was able to creatively apply my skills. I started my career believing our culture would eventually embrace the value and importance of education. I was wrong. My wages never reflected the time I put in or the level of my expertise. I stayed in teaching because I was successful, and I could see I was making a difference for kids. My principal gave me the book, Teaching as a Subversive Activity, and his support fueled my courage to continue doing what I knew was good for kids. By the end of my career, the culture of education changed. Teachers began to be hired and rewarded for compliance. Increasingly, it seems that innovation by teachers is viewed as subversive behavior.

After 30 years of teaching, a principal asked me to remove my student artwork from the walls because it made the other teachers feel bad because their students couldn't draw, and

it wasn't required schoolwork and it shouldn't be highlighted. I was stunned. Until then, I thought my unique skills made me an asset. Now the exceptional work of my students was problematic to others in my building because it upset the status quo. I knew then that public education needed serious reform and that I was powerless as a teacher to be part of that change. I watched as teachers, following district mandates, began to apply instruction with uniformity, limiting their ability to be responsive to individual student needs and to increase the relevance of learning to the larger context. Increasingly, classroom conversations became scripted to the point that learning was no longer born of inspiration nor fueled by desire.

I decided to teach at a charter school committed to history, arts, and liberal arts education. There I had the freedom to refine and develop the instructional strategies beyond what I thought possible. I explored teaching with no preconceived notions about what the kids could do, and the students excelled. My students achieved at exceptional levels on state tests and significantly higher than the school average. However, charter schools bring their own set of challenges, and in this case, there was no accountability to established teaching practices, to their charter, or to the students and families they serve. The problems I saw at the charter school were dangerous to students and I didn't know what was worse, the lack of integrity and professionalism in the charter school, or the systemic regulation in the school districts.

The optimism that brought me into teaching continues to drive my ambition and I deeply hope that I can participate in meaningful conversations to improve education to benefit teachers and students. There are new challenges and opportunities arising in schools and our students need the voices and personal commitment of professional classroom teachers who innovate to serve the diverse needs of students in a society that is rapidly increasing in complexity. It will take courage and boldness to align policies and practices with what we know works to propel learning for the children whose future depends on what we do today. I want to be part of the solution.

The students in my classroom call themselves scholars and artists. They are driven by the same thirst for invention and discovery as all the great scientists and artists. They love learning because as we learn in my classroom, we develop their creativity. They exceed the expectations placed on them by the school system. More importantly, they exceed their own expectations, regularly and consistently, building confidence in their ability to be successful and discovering new possibilities for their lives.

Cally Flox shares her perspective: *As a teacher myself, I always enjoy being in Scott's classroom. I always leave inspired, informed, and hopeful about the future. Year after year, I have witnessed seemingly miracles as students and families transform under his care and return years later to report their experience with him was singular in their lifetime. Since I am married to Scott, I have seen firsthand, both behind the scenes and in public view, his significant impact on students and colleagues. I have been developing and implementing professional development programs for teachers since 2000. I have seen that teachers prefer to learn from other teachers who are in the trenches with them, who share real experiences without sugar-coating the challenges. Scott has been our most requested presenter. Teachers have often asked to have his philosophy and practices in print to study his practical insight to educational conversations at all levels.*

Debora Escalante is a university professor in teacher education. From her perspective: *I have observed Scott's teaching practice for over a decade and believe a deep description of his classroom practices and pedagogy needs to be available to a larger population of teachers beyond those currently engaged in his professional development courses. When I first got to know Scott, I was intrigued by his student work and his articulate ability to describe his students through their work. I was drawn to observe his class and I documented my observations to unpack elements of his success, many of which are shared here. He uses traditional elements, proven decades ago with current standards, content, and innovative instructional strategies to produce exceptional results. He implements the best educational theories, seamlessly. His students are engaged and excited to learn. While the students entered his class with diverse learning styles and a wide range of previous success, they all appear to thrive in his classroom. Some might attribute the success to individual personality or talent, but evidence gathered from teachers who have participated in his professional development courses shows that the strategies he uses can be applied very successfully by other teachers as well.*

Introduction

Education is the business of developing people. People basically want two things: a safe place to belong and opportunities to distinguish their individuality. For kids and adults alike, curiosity authentically drives learning. Things that are novel, weird, or inspiring, including accomplished people who are unique and innovative, capture our imaginations and ignite our passions. Learning is an organic experience that can't be systemically orchestrated but instead nurtured, one experience at a time. How can these elements be included in our education system to activate timeless attributes of human nature and personalize the experience of teachers and students in schools?

The strategies presented here were developed in the classroom of Scott Flox, whose students consistently exceed expectations as demonstrated by what his students produce, the most significant indicator of achievement. The outstanding work of his students has attracted the attention of parents, teachers, and administrators for over four decades. He has shared his strategies with hundreds of teachers who have also had success when applying these concepts. To fully appreciate the ideas presented in this book, you are invited to review examples of his student work at www.scottflox.org.

Scott shares his perspective:

I have a lifetime of experience as an elementary teacher and have taught approximately 1,200 children how to read. Each school year, I observe, evaluate, assess, and document the learning of individual students. I identify their strengths, passions, thinking patterns, and challenges to unlock achievement at their highest levels. I remember what it is like to be a kid and I try to see learning through a child's eyes. In my experience, the key to student learning is to teach students how to learn then inspire their curiosity.

Wisdom is gained from experience. Professional educators, just like other professionals such as athletes, doctors, and firefighters, make rapid, repeated high-stakes decisions. Each decision refines their judgment. The unpredictability of each "on-the-job" situation demands quick analysis, creativity, and constant adaptations. Experts work daily to apply the right strategies at the right moment for optimal results. High-level performance skills are often

mislabeled as “gifts” as observers try to explain extraordinary outcomes that defy the imaginable or appear as luck. Specific skills are rehearsed until their actions look and feel like instinct.

Artful teachers understand children, the neuroscience of learning, the curriculum to be taught, and how to tailor decisions precisely for individual student growth. It is important that we capture and describe the ability of teaching experts for new teachers in the field to improve upon in order for this service profession to propel excellence into the future.

Foundationally, students need to learn how to learn and learn how to think. In Mr. Flox’s classroom, learning to learn is taught through basic drawing so the students can do something fun while they learn to listen and follow directions. The ability to think is developed in conversations with strategic questions designed to teach and assess desired learning outcomes. Thinking is made visible in mind maps, research projects, drawings, master studies, or stories created by the students. Teaching this way applies the judgement of professional teachers to develop the strengths and ability of individual learners. But this is only possible if teachers and school leaders create an environment primed for connection, growth, and creativity.

There are seven key components in his instruction described in each chapter labeled by the chapter title:

1. Get to know the kids
2. Collect and apply relevant data
3. Focus on literacy
4. Teach students to draw
5. Create mind maps for learning
6. Conceptualize big ideas
7. Unleash the possible

The first 3 components are key in any classroom and weave inextricably into the culminating practices of his instruction: drawing, mind mapping, and connecting all learning to “big picture” concepts to “unleash the possible”.

This book includes stories from Mr. Flox’s life and teaching to illuminate the thinking behind these key components while providing a clear picture of how educational theories are applied in real life. Readers are, in turn, invited to consider how their own background experiences and knowledge influence their educational philosophy and instructional practices. We hope readers will identify and reflect on their own experiences, both from their own life and from their classroom, to help them articulate what they know, preparing them to collaborate meaningfully with students and colleagues. The intent is to lift up the stories of Scott and other teachers, utilizing and growing thoughtful networks of educators, to determine and design new measures of quality in teaching. In the process, we can humanize the educational experience, improve instructional practices, and provide a framework for teaching and learning that can withstand the test of time.

Chapter 1: Get to Know the Kids

To Scott, every kid is a potential scholar: *Kevin was a skinny blonde with oversized glasses and a funny half grin. When Kevin entered fourth grade, he could not read. His time in resource over the years kept him out of the social structure at school so he didn't have friends. His mom reported that he was severely depressed. Getting him to attend school every day felt like a battle and his parents felt desperate. However, Kevin loved to draw, and he was good at it. To entice him to attend school, the creative principal invited him to join my first grade gifted and talented class as my assistant art teacher. Kevin drew alongside the others and spent most of his day as the best artist in class, modeling for others. He gained confidence and positive relationships as well as further developed his hand-eye coordination, visual discrimination, visual memory, and concentration, which were then explicitly connected to skills needed for reading. Drawing with the first grade soon replaced his time with the resource teacher. After art one day, Kevin agreed to stay and read* Charlotte's Web *with the class, after which he eagerly participated in the reading instruction and other academic subjects with the accelerated first grade students. By the end of the year, he was reading at grade level and carried himself with a new level of confidence.*

The greatest opportunity for a teacher is to get to know their students, to find their strengths, and build on them. Many things can interfere with learning opportunities, such as underexposure, learning disabilities or delays, situational stresses, overprotection, trauma, or any life situation that limits students' abilities to explore and develop their passions and potential. The more teachers learn about students, through careful observation and listening, the more they can find opportunities for success, address student needs, compensate for disparities, and align what needs to be learned with their strengths and interests.

Instruction, discipline, and assessment strategies must be tailored to the individual needs of each student. Strategies are most effective when teachers take time to find and address the root cause of the issue. **Children learn best from people they like, and who they believe like them.** Competent professional teachers, who know their individual students, make professional decisions on their behalf to personalize the learning for each child.

Scott shares this story: *Tyler was enjoying his career as a professional drummer in LA. when I got his Facebook message. I recognized the smile in the photo. From 20 years before, I remembered his dimples on his blonde-framed chubby cheeks. In his time at school, Tyler had been frustrated to tears almost daily when he was compelled to comply with traditional school practices. He hated school, throwing tantrums often. Tyler spent most of his time with his head down on his desk just trying to survive the day. He would tap his feet and hands to help him relax. I noticed he had a natural sense of beat and played complicated rhythms. I bought him a rubber drum set with multiple drum pads and drumsticks for pounding and sent it home with him and his mom. I told him that he could play it all he wanted for a few weeks at home and then he could bring it back to school and keep it on his desk so that when he was anxious, he could play the drums. The drumming helped him relax. As he relaxed, he engaged more deeply in instructional activities and increased his positive interactions with others. He began to enjoy coming to school. His drums stayed on top of his desk, never out of his sight.*

By observing Tyler's needs and addressing them in a creative yet simple way, Scott changed a life for good. This chapter will outline strategies to help teachers connect with students, the first step in timeless teaching.

Play and Engage in Authentic Conversations

Arts engagement invites conversation on many levels. Scott frequently used various art forms as a means of connecting with the class: *Along with drawing and art making, I play my guitar and sing songs with the students in my class. I also perform for them so they can be an audience. Sometimes music is a reward, other times it is just for fun. We make up silly songs and the students dance to the music. We take turns telling stories and acting out*

vignettes. Students take risks and experiment with new ideas. They learn to play. They navigate social expectations, take turns, and express their personal identity within a group. I notice what makes them laugh, which is a clear indicator of how they perceive the world. I notice how they express themselves, revealing a strength. Their biggest concerns are often revealed in these playful times. ***A good lesson inspires more questions than it answers,*** *compelling students to continue learning well beyond the school day as they discuss new ideas with their friends and family members.*

Arts activities, as described above, provide various types of conversations and opportunities for teachers and students to express their personality and share their talents. Singing together, listening to music, dancing to music, read-alouds with character voices and facial expressions, are engaging ways to build relationships. Each day, students show up at school with their own interests and strengths that often go unnoticed. To bridge that gap, teachers can discuss or engage in music, art, sports, hobbies, current news, and other interests that reveal strengths, weaknesses, and interests to meet the students where they are.
 Furthermore, these activities can represent project-based learning in action where literacy strategies and culminating products connect to bigger ideas and themes across disciplines. Observing student preferences and ability during these activities will help teachers identify and address student strengths, likes, and needs to reveal openings that any teacher can immediately put to use. There is power for students in knowing that what they bring to school is an asset to classroom learning and teaching.

Observe Developmental Indicators

There are physical, cognitive, and social and emotional indicators for learning readiness that provide valuable information about students, including their gifts and challenges. (Teachers may also want to consider indicators for language development.) As students grow, the developmental indicators can also be a reference to identify stress triggers. Sometimes tasks that may seem easy to perform become difficult under stress. For example, when people are nervous, they may lose their ability, even momentarily, to perform the task; they may stammer, drop things, or freeze. Observing the status of, or a change in these indicators, provides valuable information about what may be needed to improve performance. When teachers notice areas where specific indicators seem out of sync with the age and general development of the child, teachers can reflect as to whether it is situational or developmental and consult with other professionals for specific recommendations.

Below are examples of what to look for in each category.

- Physical: this includes motor skills and sensory assessments.
    - Can they smell things in the room?
    - How is their vision?
    - Can they hold a pencil, draw, sketch or use other fine motor skills?
    - Can they mimic sounds? Identify sounds? Respond to sound signals?
    - Can they articulate words? Interpret words?
    - Can they skip, hop, balance, or perform other gross motor skills?
    - Are they agile or flexible?
    - Do they like to touch things?

- Cognitive: this includes questioning, analyzing, synthesizing, making connections, abstract thinking, and applying what they know to perform tasks.
    - Do they remember what happens?
    - Can they pay attention? Follow directions?
    - Can they transfer information from the board to their paper?
    - How do they use space on a paper? Do they use the whole page or just parts?
    - Do they formulate questions?
    - Can they imagine? Visualize? Think abstractly?
    - How is their vocabulary?
    - Do they have a sense of humor?
    - Do they see irony? Observe the ludicrous? Notice hyperbole?
    - Can they explain a situation?
    - Can they make analogies?
    - Can they make connections? Even absurd or abstract ones?

- Social and Emotional: this includes understanding and communicating with self (interoception) and others.
    - Can they describe how they feel?
    - Can they regulate their emotions?
    - Can they advocate for their own needs?
    - Can they look you in the eye?
    - Do they show empathy to others?
    - How do they problem solve with peers?
    - Are they overly self-focused?
    - Do they understand they are part of a bigger picture?
    - Are they self-reflective?
    - Can they talk to a group? Read aloud?
    - Can they read body language and/or nonverbal cues?
    - Do they understand the traits of a character in a story to predict the behavior of the character?

Identify Personal Indicators

It also helps to notice a student's personal way of living in the world. What choices do they make when they relate to others? For example, when do students hesitate and what do they avoid? Or what opportunities do they seek? Consider these items for observation:

- How does the student relate with adults?
- How does the student interact with other children?
- Do they compromise?
- Who do they play with? Do they make friends?
- How do they prefer to play? What do they like to do? Alone? With a friend? In a group?
- What do they like and dislike?
- What do they talk about? What do they collect? What do they read?

At the beginning of the year, teachers can invite parents and the child to meet with them and evaluate selected student skills. This establishes a shared understanding of student ability

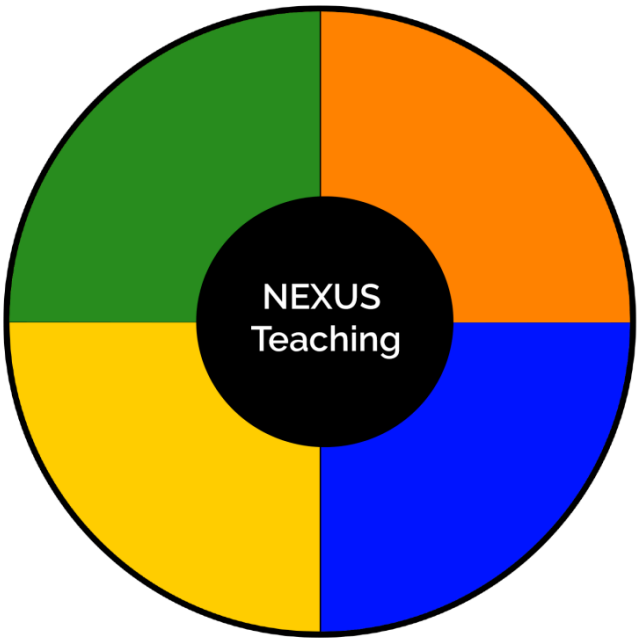
and invites the parents to work with the teacher to support the student. The goals set and commitments made during this meeting create a vision to serve the student. Advancement towards goals can be revisited during the year in casual exchanges and at parent-teacher conferences.

When meeting with the parents, additional information about children can be observed and discussed (after all, the child may grow up to be much like their parents and are at least influenced by them). Parents deserve to see evidence that the teacher wants to get to know the child. Conversations could include:

- Are they responsible for pets at home?
- Which extracurricular activities do they participate in?
- What other external pressures exist?
- How much time do they spend on video games, TV, and social media?
- Do they have the time and support they need for schoolwork, rest, etc.?
- How do they get along with siblings?
- How do they manage their free time?

A teacher can also observe how the child and the parent/guardian relate. Does the child feel supported by the caretaker? Does the caretaker give answers for the student? Is the guardian objective? Overly negative or positive? Does the caretaker make excuses for the student? Does the student accept responsibility? **These are subjective questions for reflection and should never be used to judge others, only to refine sensitivity and increase the teacher's empathy and ability to serve the student.**

Apply Indicators of Personal Preferences & Temperament



In education, understanding people is as important as understanding the content areas being taught. There are many great theories and tools from the field of psychology for learning about and understanding people that are applied in education, business, and in industries such as health care. Find your favorites and use them. For educational use, George Nelson, author of *Breaking the Learning Barrier for Underachieving Students*, promotes the use of a simplified version of the Myers Briggs indicators that recategorizes the personality types into four groups, each identified by a color: Blue, Gold, Orange, or Green. He has developed a quick assessment for youth. These are not intended to label students, but to aid in observing their behavior to get to know them better in order to help them succeed. These categories instigate reflection to build understanding about how they interact with other people and the world around them. In simplified form:

- Blue students focus on people's feelings and social skills and value being liked.
- Gold students focus on rules and policy and value being organized.
- Orange people are adventurous, competitive, follow their passions, and value having fun.
- Green people focus on accurate information and logic, are curious, and value competence.

The categories provide a shorthand to help teachers deliberately consider the various needs of individual students. Keep in mind that all children are a mix of all the of the colors, but most will lead with one color as their strength. Knowing children's strengths can be helpful when trying to connect and motivate different learning types. Experienced teachers will also know how to incorporate teaching strategies that can reach each child simultaneously, within the same lesson. This is also known as "teaching in the NEXUS".

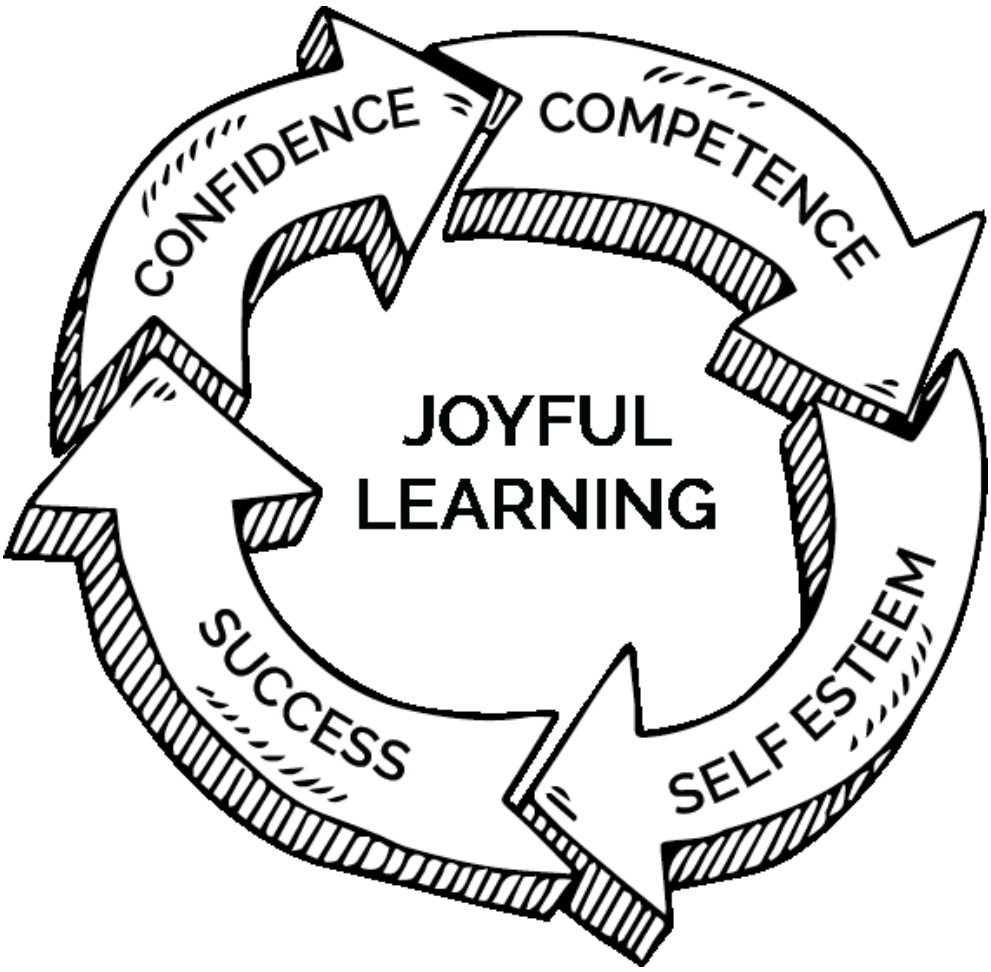
In simplified form, NEXUS teaching is represented in these five principles:

1. Allow choices
2. Do the unexpected
3. Relate to the values of the learner
4. Allow for the humor of life
5. Elevate thought

When teachers focus on the primary needs of different types of learners while including these NEXUS principles, a broad range of students can be reached. To learn more about NEXUS teaching, visit advancingartsleadership.com.

Scott shares this reflection on how using this color assessment can also help build relationships with parents and families: *The results of the Myers Briggs testing were very helpful at parent teacher conference as it gave me a way to show parents a new perspective of their child. I explained the 8 indicators and then showed the results of how their student scored him/herself. After sharing my insights about their student as well, the parents knew I cared about and understood their student. Often parents told me that seeing their child with this new perspective improved their relationship with them and helped them be more effective parents. Once the parents trusted me, they would more often do what I asked, which was read and practice math facts with their child every night. This parental focus contributes significantly to student success.*

Often the most valuable information about a student's growth is revealed in the way they behave, including their facial expressions, gestures, and communication. Growth is also observed in the choices they make and the stories they share, or don't share, revealing their thoughts, perspectives, and personal lives. These indicators are often not measurable quantitatively but are understood through shared experiences and remembered within the relationships that are built.



Teacher judgement is also developed through strategic application of information gleaned from careful observation of and listening to students. Teachers who build relationships to find what motivates a student can then inspire hope by providing learning opportunities that guarantee success. **Students don't want to be told they are good at something; they want to experience being good at something.** Success builds confidence. Confidence builds competence. Competence builds self-esteem, which empowers students to do the hard work of learning, joyfully.

Tracking Sheet
Inventory of Student Skills, Abilities, and Preferences

Downloadable copy is available here.

Name:

Allergies:

Strengths:

Things they like:

Thinks they dislike:

Things we have in common, or shared values:

Physical Skills--balance, skip, hop, agility, hearing, vision, smells:

Cognitive--ask questions, be curious, be attentive, listen, auditory processing, follow directions:

Social--look people in the eye, show empathy to others, are they interested in others? Can they stay on topic in a conversation?

Emotional Skills--self-regulation, self-awareness, understands they are part of a bigger picture, has perspective about self and others:

Basic Drawing--spatial relationships, visual memory, using space and negative space, hand eye coordination, can they write on a line, fine motor skills:

Personality preferences priority objective--knowledge/competence, emotions/people, rules/organization, fun/adventure:

Rate on a 1-5 scale

- How developed is their vocabulary?
- Do they draw analogies and connect information?
- Do they have a sense of humor?
- Do they retain information/remember conversations from day to day?
- Does the student accept responsibility?

What are they responsible for at home? Pets? Siblings? Chores?

Daily screen time and priority activities:

Relationship with the parents/caretakers:

Want to Know More?

Online report: *"A Nation at Risk to a Nation at Hope, Recommendations from the National Commission on Social, Emotional and Academic Development"*

Breaking the Learning Barrier for Underachieving Students by George Nelson

The Four Lenses Kit and other tools to identify student preferences are available through Clime International or fourlenses.com.

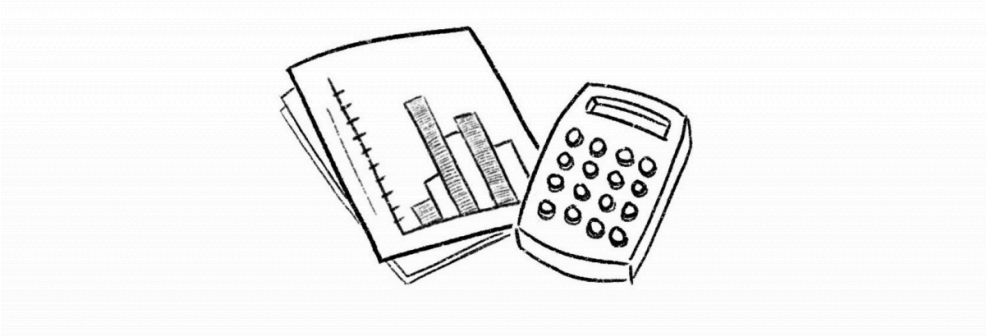
Reflection

1. What do you value most in life?
2. How do those values inform your daily decisions?
3. What are your best traits when you work with children?
4. Compare and contrast your learning style and values to a student who differs from you.
5. List three ways you can learn more about your students.
6. What else do you know that relates to this chapter?

How would you rate the overall quality of this chapter?

Very Low Quality
Low Quality
Moderate Quality
High Quality

Chapter 2: Collect and Apply Relevant Data

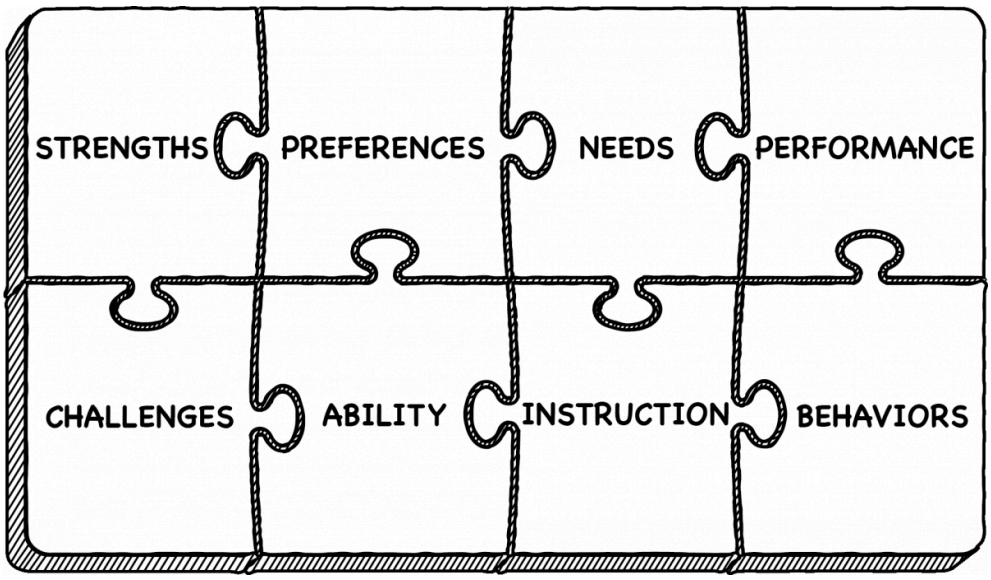


Scott shares this story about the benefits of collecting data: *As a competitive high school and college shot putter, I knew exactly what a perfect throw looked like, and felt like, and I knew what to do to increase the distance of the throw. I analyzed hundreds of hours of video, studied the physics of gliding, spinning, and the angles of release for throwing. I understood the power position or the length of motion of the ball as it moves through the release zone. I kept data on every variable to determine what changes increased the distance of each throw. Small changes could result in significant improvement but most change came in small increments. If a change led to even a half-inch improvement, I recorded the cause of the benefit. I was small for a shot putter, by 50 lbs and several inches in height. I needed every advantage I could get.*

Even though I would never compete at the Olympics, I was a fierce competitor. Every time I stepped in the ring, my goal was to beat my previous throw and improve my personal best. In competition, I always chose to throw first, to keep my focus on my performance and not be distracted by the performance of my competitors. In 1974, I broke my college record by five inches. The newspaper reported the throw as the 4th longest in the country that year at the college level. Two days later in my Sunday morning practice, I consistently threw two feet further than the record-breaking throw. It was as if the barrier in my mind had been broken, releasing new possibilities. This competitive focus for high achievement paired with my understanding of incremental improvement transferred into my teaching. I strategically used various types of data to improve student performance beyond what they thought possible expanding their vision of what is possible for their life.

See the Whole Picture

Collecting data is just the beginning. Applying the data to improve performance is part of the art of teaching. As with a single piece in a jigsaw puzzle, each piece of information cannot be interpreted in isolation. The collection of data points reveals a more complete picture which includes student ability, strengths, challenges, behaviors, and preferences to understand the connections between performance, instruction, and student needs. The meaning of each piece of data is revealed when it is appropriately connected to the whole picture. When teachers explore multiple data points simultaneously, a clearer view of the child and solutions for learning will emerge.



When teachers look at the whole picture influencing student performance, they can adapt for individual needs. For example, if a student tests with a high intellect but they are producing poor work, a teacher can explore why this is happening. Is it lack of motivation, lack of challenge, outside stress, a need for glasses, a hearing aid, or another factor? If student work exceeds the indicator of the formal assessment, a teacher can look for clues about why the student is not demonstrating competency on the test. For example, a different type of assessment can be tried to discover if the student struggles with the content or the assessment method. Additionally, the student may not be able to process some types of information and understand only fragments. Additional activities can develop their neurophysiology for interconnectivity between information and application. Activities where the students experience their strengths and joy can build interconnectivity between their passions and a difficult concept. Consider activities that the child is drawn to, such as drawing, playing an instrument, dancing, or sports, and provide ways to incorporate them regularly.

To help complete this whole picture of the child, teachers should keep a file on each student to collect a variety of artifacts. The file should include both formal assessment data and informal information as well as evidence of formative assessment. As data is collected, this

file will hold many clues leading to answers to personalize instruction for each student. File artifacts could include:

1. Testing data from previous years in school and all additional formal testing that has been done.
2. Notes from previous teachers and other school personnel from previous years.
3. Current academic data and benchmark results: reading level, vocabulary level, comprehension, fluency, math facts, spelling, other content area test and quiz data (kept in a grade book).
4. Samples of student work.
5. Personal information: strengths, challenges, likes, dislikes, personality, situational stress including information about family/home, etc. (see tracking sheet in Chapter 1).
6. Developmental indicators for physical, cognitive, and social-emotional growth.
7. Cards or drawings the students have given the teacher.
8. Notes from home and from other school personnel.
9. Self and peer assessments.
10. Any other relevant information.

Teachers can record academic information in a traditional grade book. For parent teacher conferences, a copy of the individual student scores can be printed and placed in the file. Examples of student work should also be brought to conferences to celebrate and discuss with parents and students.

To monitor academic progress, schools and districts often establish a unified system for benchmark data to track student growth. Benchmark assessments can track reading level, reading fluency, math facts, vocabulary, content assessments, etc., which can inform daily instructional decisions as well as provide summative indicators of growth. The purpose and limitations of each assessment should be considered. Select complementary assessments and optimize instructional time by minimizing testing cycles prudently.

Scott reflects on the data dilemma*: Many teachers talk about the stress in education of too much emphasis on testing and data collection, particularly when data is misused to categorize students and evaluate teachers instead of as a learning tool. I have seen time wasted with unnecessarily repeated testing cycles, as well as with misunderstood and inefficient use of data. I have seen teachers give up on what they know is effective to comply with "research based" mandates. I have seen students develop nervous tics, pulling their own hair or biting their own hand, leaving teeth marks, when required to take long exams on a computer. The cognitive dissonance I feel in those moments is demoralizing. On the other hand, equally painful are the times I have experienced when the opposite is true and there are no data collected or tests run to help students who need help. Or worse, the tests are run, and nothing changes in response to the data. I've seen early learning challenges left undiagnosed and essential intervention opportunities missed, causing students to get further behind and leaving life-long scars. If K-2 teachers are adequately trained in diagnostics and early intervention, and use the available data appropriately, help can be delivered during this critical developmental phase of life, protecting children and saving resources. The most humbling yet rewarding part of teaching first grade for 30 years was that I know my influence established a life-long trajectory. I believe that more needs to be*

done to help students in these early years and to address the needs of older students who did not get the needed help.

What students produce can be the most telling and valuable indicator of academic progress and ability. In project-based classrooms, students demonstrate knowledge and skills through the quality of the projects they create. Evaluating the work students create or perform is authentic assessment. Authentic assessment is formative as it informs instruction during the creation of the artifact/product in an immediate feedback loop. The artifact /product can also be a summative assessment as in a book report, a music concert, or a science fair project. Authentic assessment also reveals work and thinking habits such as determination, focus, collaboration, creativity, critical thinking, and problem-solving. The learning is visible in what students produce as well as in how they engage while they are working. The following questions will help teachers gather information about students while they are working:

- Do they stay on task?
- What questions do they ask?
- What connections do they make?
- How do they solve problems?

Test scores, leveled rankings, and other information gathered should align with the work being produced. When they don't, teachers can explore possible causes of the discrepancy. What is the student missing? How can the gap be addressed? This is when the personal and behavioral data gathered earlier becomes essential to provide ideas to help students achieve at their fullest potential.

The more information a teacher uncovers about a student, the more precisely selected solutions can be applied to individual needs and strengths. Some data monitors student growth and other data informs instructional choices. Students benefit from creative teachers who look for various applications of data.

Another form of data comes in educational research, theories, and accepted principles. There are many effective research-based instructional practices available in reputable journals and books. To understand and apply the most relevant research effectively, educators can ask:

1. How are my students/school/community the same or different from those in the research study?
2. How does this research present strategies to optimize the strengths of our students/school/community as well as the greatest needs?

The more relevant research-based strategies a teacher collects, the more options the teacher will have to help the students. As with all scientific discovery, it is the creative application of information that reveals how practices, theories, and strategies are most effective to advance the field.

The whole student becomes visible as the data reveals various aspects of each individual and possible instructional strategies. Teachers who use formal and informal data well, and apply the relevant research, will develop effective practices through deliberate repeated trial

and error, refining their judgement until it appears instinctual and intuitive, like a gift rather than a skill.

Scott recalls a student who benefited from the “whole student” approach*: William started his 5th grade year quietly but after a few weeks in my class, I started to enjoy his quick wit and sense of humor. In conversations, he used satire and a good vocabulary. He drew cartoons with captions. However, his schoolwork and achievement on tests did not reflect his ability. We connected as sarcastic artists, and he engaged in schoolwork when we were drawing and mind mapping. As he learned to draw with increased detail, the captions and ideas in his cartoons also become more sophisticated. His ability to talk on his feet showed promise for performing for others so I encouraged him to learn scripts which motivated him to read. His love for history inspired more reading and his academics improved, reaching the top of the class within a few months. Once his motivation matched his intellect, he performed at his ability. At parent teacher conferences, I mentioned I thought he would be great at acting. His mom found him drama classes right away. He enjoyed acting through middle school, high school, and college, which is the last time I heard from him. He and his mom enthusiastically let me know his time in my class was pivotal for his success.*

Reflection

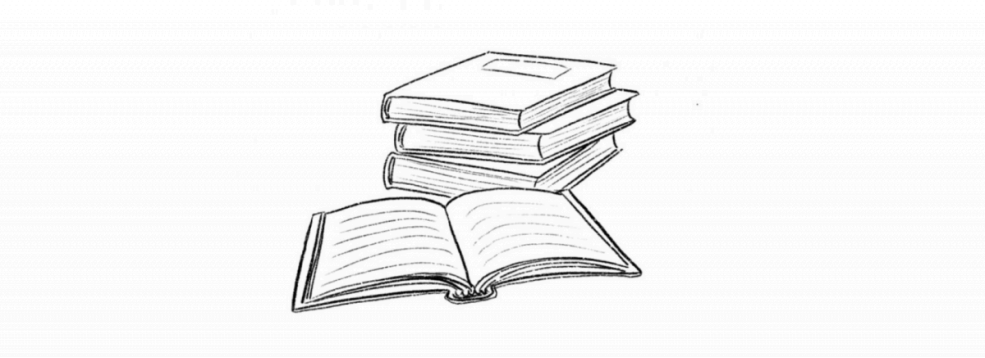
1. How do you feel about data, testing, and assessment?
2. How can you improve instruction using data?
3. What do you most want to know about your students’ learning?
4. What is the most important type of student data you track? Why?
5. How can you better organize the data you collect to use it more effectively?

Want to Know More?

Ten Mindframes for Visible Learning: Teaching for Success John Hattie and Klaus Zierer

Contact your district leaders for descriptions of each required test given to your students. Find out the purpose of the test and the limitations of the test. Apply the information accordingly.

Chapter 3: Focus on Literacy



Scott shares this story about coping with his own reading delays: *I had serious learning delays, likely caused from birth trauma. In first grade, I started speech therapy twice a week, with Ms. Button, the nicest person in my school. My dad helped me do the assigned exercises every day. I remember repeating the sounds exactly how I heard them and not understanding why people didn't know what I was saying. But I kept trying, hoping to please Ms. Button and my dad. My parents were told I would likely always need speech therapy. I substituted d's for f's and w's for r's. My grandmother scolded me to stop talking like a baby. I also stuttered, putting me at a disadvantage compared to my twin brother who easily overshadowed me. When I was in first grade, I was one of three students in my class who couldn't read. We were labeled as lazy or dumb. Each of us was punished regularly for various reasons. When I lost my place in reading, the teacher would call me up to the front of the room for a spanking, or if she was walking through the room, she would hit my knuckles with a ruler hoping that I would pay better attention.*

Like most kids, I loved music. In third grade, I spent hours playing the Sears Silvertone guitar that I bought for $19.99. I listened carefully to records of the Beach Boys, The Ventures, Bob Dylan, and my dad's favorite, Josh White. I spent hours in my room playing the records until the grooves were worn down, plucking each string on the guitar until it matched what I heard. My dad told me that when I could play Greensleeves, I would be a real guitar player. That song is still one of my favorites.

My careful listening eventually paid off. I remember the first time I heard myself speak accurately and realized that I was mispronouncing Fury, the name of the horse who always saved the day on a TV show. My dad helped me practice saying "Fury" instead of "Dewy." It

was as if a light went on. One day I couldn't hear the difference, and the next day I could. I was elated. Now when I practiced, my speech actually improved. I worked hard and finished my visits to Ms. Button by the end of 3rd grade.

When I was in fourth grade, I was grouped with second graders for reading. I knew I was not a good reader, but I was shocked to discover how far behind I was. The humiliation negated any benefits I may have gotten from the reading instruction even though I knew I needed help. I thought about this situation and realized that the teachers did not know how to teach me to read, and I needed to figure it out for myself.

Then, something happened that changed the world. In February 1964, the Beatles debuted on the Ed Sullivan show. They were the coolest thing I had ever seen. I played my guitar and sang their songs. When I got the sheet music, I memorized what the words looked like off the sheet, as I knew them by heart. For the first time, I was reading words that were interesting to me. I would read the word and break it down to figure out what each letter said. I found the order of words, syntax, and sentence structure, and experienced how they interrelated in paragraphs. I had great visual memory. If I saw it, I knew it. I drew constantly, likely because I felt successful using visual memory. I developed the spatial reasoning to read chord charts and my ability to think and analyze was developed as I figured out chord patterns to transpose the Beatles songs I was playing into a key in which I knew all the chords.

However, my vocabulary was still limited because until 3rd grade, I couldn't clearly understand many of the words in the conversations around me. If I couldn't decipher the words, I couldn't conceptualize their meaning. I didn't have a large enough vocabulary to use context clues, so I used images to compensate. The photos in the World Book Encyclopedia *and the caricatures in* Mad Magazine *were a great asset, as I read the caption underneath each image and learned what the words meant. The satire in* Mad Magazine *about movies and TV shows deepened my comprehension because I had to apply higher level thinking skills before I knew why it was funny. The artwork in the facial expressions of the caricatures showed more than the dialogue, revealing inconsistencies in the caricatures, and reflecting their true thoughts and personalities. Laughing and discussing TV shows with my best friend while deconstructing the stories in our favorite magazine taught us to read expressions, identify details, make connections, compare and contrast, sequence ideas, make analogies, and understand irony. That is the experience I work to replicate when I use mind mapping to teach reading in my classroom. Children need an environment where their personal connection to the content drives their personal motivation to learn in an open-ended way. Over time, their unique neurophysiology will develop until their ability is synchronous with their age and they are able to meet external expectations.*

In sixth grade, Mr. Moynihan invited my band to play for the school dance and had me draw a timeline of the impact of European exploration on indigenous cultures for the classroom which he used for many years. He used my strengths in my academic learning and my skills and confidence grew. I was finally in the high reading group, reading and illustrating the Newberry books of my choice. This built my confidence, but it took years to fill in the holes in my reading skills.

Compared to the average student, I was large in stature and strong. I was successful in athletics, which saved my self-esteem. Through middle school, I played football and basketball and was the district champion in the shot put and softball throw. When I was in high school, I participated in athletics during the day and worked graveyard shifts at a plastic bag factory. One day, the foreman of the factory, an athletic ginger-haired man, pulled me aside and told me to stay in school no matter what so I wouldn't end up like him. His message gave me the courage to take the high school remedial reading courses that I needed to compensate for my early challenges.

The guest speaker at my senior dinner was Mr. Moynihan. He remembered me as an artist and as an athlete who could throw. I knew that I was still important to him because he knew that I was a two-time state champion. I had a chance to thank him for using my strengths to help me be successful.

I started college on an athletic scholarship as a PE major and thought I would teach and coach. Breaking the college record in the shot put was the first time my dad saw me as successful instead of as a remediated student who always needed extra help. He showed up late for the track meet and missed the throw but was there for the announcement to see the standing ovation from the crowd. We sat on the bleachers after the event and talked for a long time, for the first time in many years. Seven years later, when he died, my mom found all my newspaper clippings still in his wallet.

My identity as a successful person was defined by athletics, but a few years later while taking education classes, I realized I also knew a lot about emerging reading skills. When it came time to choose a career, I knew I had a good understanding of how people learn, why they didn't learn, and how to access what they were curious about. Having learned to read through self-directed experiences, I believed I could teach others to read.

When I started teaching reading, the available materials were limited. I selected materials that would have motivated me as a student and used that to teach reading. I used rigorous non-fiction reading materials with curious facts students want to learn more about, as well as high quality fiction to provide context from life experiences to make meaning about the information they learn. We read E.B. White's books such as Charlotte's Web, Stuart Little, Trumpet of the Swan*, and others. As we discuss the life and death of Charlotte and the seasons on the farm, children at all levels, backgrounds, and abilities, engage their own values and experiences to achieve understanding, making connections to the non-fiction materials that provide needed background knowledge about farms, animals, spiders, and their own interests. I fit together a variety of strategies to improve learning readiness in physical and cognitive realms within an emotionally nourishing classroom.*

We can see from Scott's struggles that early intervention for reading challenges is key to a child's success in school and life. Reading challenges are often a result of developmental delays that can be improved with daily reinforcement of developmental skills. Teachers need more training in developmental indicators to identify challenges and provide strategies to strengthen neurological processing, including visual and auditory processing, and fine and gross motor skills. When integrating basic drawing directly into reading instruction, a wide variety of student needs are met, including emotional,cognitive, and physical skills to help every child improve their capacity to learn to read well. (This proved consistent over 4 decades of students who regularly outperformed expectations: in low-income, high-income, and within a gifted and talented magnet program. The information about students discussed in this chapter can directly inform instructional choices. While ultimately it is the student's responsibility to learn to read, it is the teacher's responsibility to align as many factors as possible to support the student's success.

Essential Elements of Literacy Instruction

Along with reinforcement for developmental skills, children need comprehensive literacy instruction every day that includes phonemic awareness, phonics, fluency, vocabulary, oral language, comprehension, writing, and concepts about print. These skills can be woven throughout daily language arts instruction which includes shared reading with the whole class, small group instruction, independent reading, read-alouds, word study, and writing instruction. These literacy elements can be thematically interconnected when related topics are strategically selected. This augments mind mapping for learning, which will be discussed in chapter 5.

Below is a brief summary of each of the instructional literacy elements and examples of how they can be thematically interconnected using a novel. What the children learn through their literacy instruction can then lead to a culminating creative project, such as writing and illustrating a research book.

Shared Reading

Shared reading is the reading aloud of text as a class while engaging in classroom discussions that elevate thinking. The text is often one to two grade levels higher than the class average reading level. In shared reading, each child has their own copy of the text or reads from a shared copy visible to the entire class. The teacher can read aloud or call on students to read aloud. High-quality literature is best for shared reading because the characters are complicated and the stories engaging. The selected piece of literature should be read multiple times: aloud by an adult with vocal dramatization, and independently by the students, and together as a group, in various order.

The literature used for shared reading can serve as the axis for all language arts instruction. Differentiated texts can be selected from books that have been leveled to accommodate various reading abilities. Books on a selected topic, although at varying levels, provide the targeted background knowledge needed. Videos, stories, and articles are also selected to provide needed context and additional background knowledge. Even grammar and syntax are best taught in the context of a piece of literature. Writing and drawing activities can be inspired by the literature as well.

To build safety during shared reading, teachers must know the skills, ability and personality of their students and call on them to participate in ways that they can be successful. In an ideal situation, observers can rarely distinguish gifted learners from learners with special needs because each question is tailored for the success of individual students. The teacher can differentiate for individual ability by asking students to read aloud passages selected specifically for them. The teacher can read a sentence aloud and ask a student to re-read the sentence. One student can read the chapter title, while another reads a phrase and another, a paragraph. This is an effective strategy for setting up a child to succeed and feel successful in front of their peers. Asking questions that a variety of children can answer, such as, what did the title mean before you read the chapter compared to after you read? Everyone participates and everyone contributes in a meaningful way.

When introducing a book for shared reading, it is important to learn about the author. In fiction, one of the characters in the book often reflects the author. Reading biographical material about the author before you begin adds insight into the characters and the story. Ask the students what points they predict the author will be trying to make based on their life experience. Students will be able to read the information more critically when they consider the author's bias, experiences, and intended audience.

During discussions about the text, students should be engaging in learning activities such as making analogies, compare and contrast activities, Venn diagrams, and other drawing and thinking strategies that will be described in Chapter 4. Engaging in topics such as irony and human nature also deepens the meaning for students. Irony evokes high-level thinking, while discussions about human nature and how the world works, deepen learning within relevant

contexts. Chapter 5 will discuss how mind mapping extends these conversations that are part of shared reading with written and drawn components to propel deep learning.

Small Group Instruction

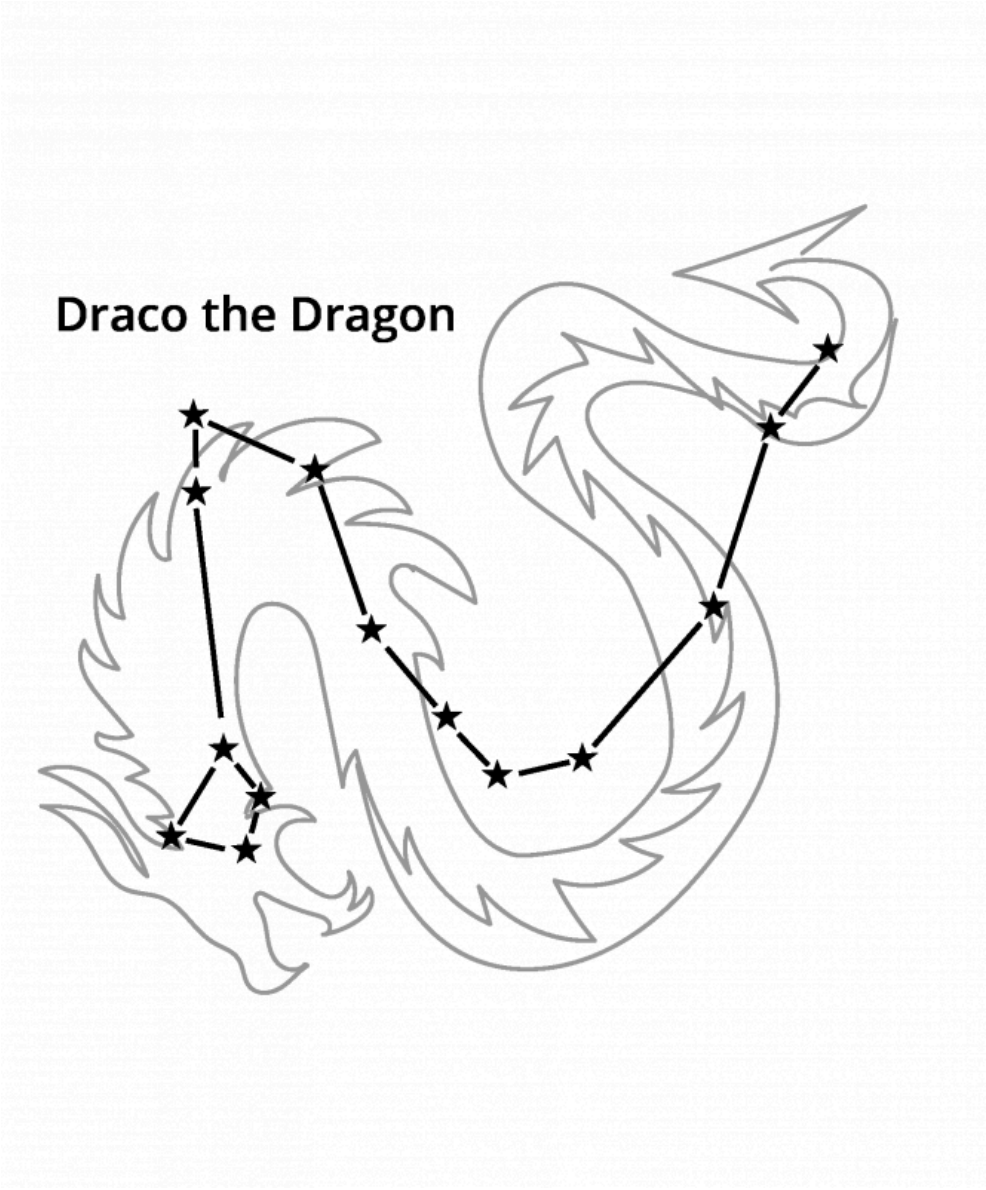
Small group instruction should happen daily to increase individual skills and monitor the reading level and comprehension of each student. Students are placed in small groups based on their current reading skills and cognitive ability to engage in appropriately leveled text. This is the time for building basic skills, i.e. phonics, tracking, grammar, as well as a time for building thinking patterns, i.e. making analogies, sequencing, forming key questions, converting specific details into concepts, visualization, and keeping kids curious. If a student's ability to think is above their reading level, being placed in a higher group can motivate a student to work harder and should be considered when placing students in groups.

High-quality leveled readers can be used for small group instruction to provide short books on many topics. Teachers can choose specific non-fiction topics aligned with the selected piece of literature to provide needed background knowledge in history, social studies, or science. This information is fundamental to understand the work of literature being read. For example, if the students are reading A Wrinkle in Time for their shared reading literature, teachers can select leveled readers about outer space, UFO's, quantum physics, missing ships, time travel, mysteries, and other related curiosities. This is a simple and elegant example of how project-based learning includes literacy strategies and assignments that are linked to a larger thematic project applying knowledge and skills across disciplinary lines.

During small group instruction, a teacher tracks individual reading progress through selected assessments. Understanding the purpose and meaning of each assessment helps teachers apply the data effectively. For example, many districts use standardized tests to measure benchmark growth in specific skills. There may be a separate test for fluency and another test for comprehension, and another test for vocabulary development, but the tests may not relate the skills to one another. Although each item needs to be looked at independently, how the scores relate to each other is important. For example, context clues relate to vocabulary and both improve comprehension. One way to measure comprehension is the student's ability to use or identify context clues because context clues relate to vocabulary. Vocabulary development will more closely align with comprehension than fluency, whereas fluency in many cases is not an indicator of comprehension. Cross checking the data reveals a clearer picture. For instance, a 3rd grade student may score at benchmark on fluency, while not understanding what they are reading. Or perhaps their comprehension is high but they are reading slowly in order to better process the information, resulting in a lower fluency skill.

Questions and observations during small group instruction help teachers determine what the data really mean for each student. A teacher can interpret the accuracy of the comprehension score by looking for evidence of how the student answers questions, retells with details, thinks abstractly, finds context clues, or uses analogies (or synonyms or antonyms). When students construct an analogy and show how they connect the two items through classification, the teacher can see their thought process and know if their fluency

scores and/or reading ability correlates with their comprehension and understanding. Teachers can formatively assess each student on various skills and individualize instruction during daily small group instruction. Information connecting reading strategies used in small groups and visual arts integration will be provided in chapters 5-6.



Making sure students are in the right reading group is vital. This requires the consideration of multiple data points, not just the assessment for reading ability. Student groups should be fluid and placements should be adjusted as needed over time. If students test higher on their vocabulary level than on their reading fluency level assessment, they may be motivated by being moved into a more advanced reading group. If a student is producing high-quality work but testing low, it is important they be intellectually stimulated by higher-level information until the reading level catches up. To understand disparities between fluency and comprehension growth, teachers should remember that some good readers are slow because they are processing deeply as they go. Some are afraid of making a mistake.

Teachers who use the data as stars in a constellation will form a more complete picture through observation of student behavior, performance, and dialogue.

Each day the small groups read and discuss their selection and its accompanying comprehension component out loud (A-Z Readers work well for this). To extend the benefit, teachers could:

1. Select leveled readers that provide background information, such as vocabulary and context needed to understand the piece of literature being read as a class during shared reading.
2. Ask students to make analogies based on the topic they are reading about, and explain what the analogy is comparing, e.g. size, texture, classification, etc. For example, “The moon is like a silver plate because it is round and has a bright color.” Students can also describe how the analogous items are different, such as, “The moon is a sphere, and the plate is flat.”
3. Make connections to math, including tables, graphs, and story problems. Help students identify important information and how they can formulate an equation or a diagram.
4. Include literacy skills specific to social studies and science, such as the interpretation of charts and maps.

Independent Reading

Independent reading includes silent sustained reading at school or at home on assigned or self-selected content. Independent reading can be self-selected for pleasure, to pursue individual interests, or to gain needed knowledge. Independent reading can be used as a second or third close reading to augment information being read during shared or small group instruction. In Mr. Flox’s class, when reading a novel as shared reading, the students are assigned to pre-read passages from the selected book at home or to read related material. This prepares the students for deep thinking before the passages are read in class. Because the shared reading in class is the second reading of the text, increased comprehension and fluency are developed, and the class discussion helps students extract deep thinking concepts from the text. Students also need individual study time with the shared novel during independent reading to reflect on the themes being discussed in class, as well time to practice skills such as phonics, vocabulary, and thinking, and questioning practices.

It is difficult to supervise the quality of reading during independent reading. One strategy that can be used is to ask parents to read with the students at home and discuss the text with them. Parents often enjoy this which supports a culture of reading and discussing books at home. In the classroom, the children can select a topic and be put into groups. They can then discuss what they have learned about their topic of interest to promote reading for interest at school. This can additionally motivate students to research specific topics for reports and projects.

Teacher Read-Aloud

Another type of reading as a group is a teacher read-aloud. Read-alouds provide a pleasurable opportunity for students to relax, listen, and imagine the story while developing auditory processing and visualization skills for comprehension. The teacher's voice inflexion and expressiveness can signify that something special is happening and heighten the sensory experience and engagement of the students. Consider reading by lamplight or using sound effects, props, and voices for each character. Read-alouds should be used regularly with various texts that are selected to build on the curiosity and enjoyment of the shared reading novel, or just for the fun and delight of reading or relationship building. Having the students draw during read-alouds may increase engagement and provide evidence about how the children are visualizing and interpreting the story.

Here, Scott shares a story of connecting with a former student through read-alouds: *I ran into Ryan when he was 23 and had just submitted his application to medical school. He credited me for his excellent MCAT score because he had learned to love reading in first grade. He recounted how we turned out the lights, gathered on the rug and read* Goosebumps*. He remembered my weird theatrical voices and the thrill of the suspense. He said,* ***"I had the confidence to try new things because you made everything fun.*** *You showed me what I needed to know so I could figure out anything."*

Word Study

A vocabulary list on the board is a staple in most classrooms. Additionally, Mr. Flox has a list of Greek and Latin roots and their definitions. The roots selected support the vocabulary words. The weekly "test" covering the root words allows for class discussion as the students practice their test taking skills of listening and writing answers while digesting the meaning of the words. Teachers who work with second language learners emphasize the value of teaching Greek and Latin roots because students are often able to make connections with their first language and connections with the new vocabulary they are learning. For example, once they know 'man' means hand, (Spanish-speaking students will immediately recognize the connection because 'hand' in Spanish is 'mano'), the meaning of the root illuminates the meaning of other words like manual, manage, manufacture, manipulate, manicure, manuscript, etc.

Students need to write sentences and paragraphs using each vocabulary word multiple times during the week. Students also build understanding when they illustrate a sentence that includes vocabulary words. Teachers can use 3-4 words in one sentence and in different contexts for deep examination of each word. The student's drawings provide additional evidence of background knowledge and connections surfacing their individual understanding and perspective. Interweaving vocabulary practice throughout literacy instruction reinforces the meaning of words in different contexts. Each activity provides repetition in varied ways to add interest and novelty to the learning, which keeps the brain engaged.

Mr. Flox also asks the students to keep their own spelling list, called a word card, on a sheet of paper at their desk. When they ask how to spell a word, it is added to their personal list for future reference. The list is broken into alphabetized segments to organize the words. (See sample.)

To look closer at individual words as a whole, present the shape of the words as a sequence of blocks with one block per letter. Children then match the shapes of the words as different size blocks to the words on the vocabulary list. While doing so, children identify each letter while looking at the whole word (see sample). For practice in visual tracking and word recognition, use a word hunt where the words only go horizontally left to right.

Writing

Students will never write at a higher level than they can read and understand the vocabulary, but they can express ideas beyond their initial ability if additional tools are added into their writing activities. Writing is hard work and having new ideas to express is a key motivator to do that work. Ask students to add icons, images, and drawings to their writing. This helps students visualize words and new ideas to develop their imagination so they can see a story unfold in their mind.

The key to strong writing is the pre-writing activities. Many class activities, such as drawing an illustration, are designed to spark the imagination, activate emotions, and diversify thinking before the students are asked to write. A conversation about a work of art using the reading concepts provided can also organize and inspire ideas to prepare students to write. Ask students to write about selected images and paintings as they break the work into its component parts. Provide a writing component to every work of art created in class by students. Providing the students with background knowledge throughout the shared reading, guided reading, read-alouds, word studies, videos, and class discussions, combined with direct instruction on writing structure, allows for students' writing to be much more meaningful and fruitful.

Literacy across content areas

Reading and literacy are intertwined into every subject. Literacy is the process of reading and comprehending any text by breaking the text into component parts and constructing

meaning from it. So, essentially, every teacher of any subject is a reading teacher. Reading at all levels includes developing essential vocabulary for new topics specific to the content.

Reading printed text is one form of literacy. Math literacy requires reading and making meaning of numbers, equations, shapes, charts, diagrams etc. Students can also be literate emotionally – by understanding their own emotions; socially – by reading others; or culturally – by being street-smart. Literacy in the art forms involves being able to use an art form to express an idea. A dance, a play, a piece of music, a work of art, a map, etc., are texts that are read and understood by looking at the component parts and discovering how they are interrelated to create meaning.

For example, the following key ELA core reading strategies designed to deepen meaning are easily taught while creating/viewing works of art:

1. Ask and answer questions
2. Determine the theme or central message
3. Paraphrase
4. Summarize
5. Visualize
6. Determine point of view
7. Consider your own point of view
8. Describe the characters' traits, actions, motivations, and emotions
9. Tell why the author/artist chose to make the characters the way they are
10. Compare and contrast facts, themes, settings, and plots
11. Read and comprehend a story

Visual art is a powerful way to teach these concepts and is one of many reasons every child needs visual art instruction.

Pulling it All Together

It's important that students have opportunities to combine and put these skills to work in a practical application. One way to do that is through creating research books. Mr. Flox's students, including the first graders, wrote two research books between January and May. He used topics from the required social studies or science core standards, selecting ones that excite children, capturing their interest while building skills in many of the required ELA standards. Below is a glimpse into guiding an in-depth research project about planets. Making a planet book takes a 4-6-weeks to create a 15-25 page book, depending on how many illustrations and diagrams the children include. Each step is done together as a class with direct instruction and student work happening simultaneously. Examples of student work can be found online at scottflox.com. Here is how it works:

Part One: Gather Information

1. Display books with real photos and diagrams of planets around the classroom.

2. Watch the video “Patrick Stewart Narrates: The Planets” to teach the students to take notes and how to make an outline for their book.
3. Students brainstorm questions which are written on the board in outline form, starting with fact-finding questions on all 8 planets: the mass, the rotation, the size, distance from the sun, diameter, the elements the planet is made of, and the environment.
4. Enthusiasm peaks when we take a field trip to the local planetarium.
5. Students now have enough background information to select one planet for their report. Give them a few days or a weekend to select which planet they would like to write about.
6. Write their names and the planet on the board so they can all see their name and planet posted.
7. Gather students who are writing about the same planet to collaborate if they want to.
8. Students can search the internet for additional information. Have them select the most important information and print it out.
9. The teacher can provide charts and tables about the solar system.
10. Students can bring additional resources from home.
11. Students add the resources to the notes they have taken and are prepared with an abundance of reference materials to begin writing their report.

Part Two: Narrow the Focus, Extend the Thinking, and Create the pages

1. Students and teacher refer to the list of questions. Teacher extends the questions moving from facts to higher-level thinking on Bloom's taxonomy: remember, understand, apply, analyze, evaluate, create (Benjamin Bloom, 1956), as exampled below.
2. Each page of the book answers one question with sentences, 1-2 illustrations, and diagrams. Possible questions include:
    a. What is the name of your planet?
    b. Why do you think it was named that?
    c. Describe what it looks like through a telescope.
    d. What does it mean in Roman mythology?
    e. Where is your planet in the solar system?
    f. How far is it from the sun? How far from the nearby planets?
    g. What elements is your planet made from?
    h. What is the diameter of your planet?
    i. Calculate your age in years if you lived on your planet, based on number of trips around the sun.
    j. Calculate your weight on the planet, based on gravity.
    k. Imagine and describe an alien that could survive on your planet. What adaptations will the alien need to survive?
    l. Illustrate what the alien looks like.
    m. Describe the habitat of the alien and why the habit is effective on that planet.
    n. Illustrate the habitat.
    o. Make an analogy about your planet and illustrate it.

3. For the culminating activity for their planet research, students get to be creative. Students create a life form that could live on that planet describing their food supply, shelter, life cycle, daily life routine, and physical characteristics.
4. The students then support their ideas by making a chart labeled with three columns: facts, adaptations, ramifications, to explain how and why the life form lives and survives the way it does.

Part Three: Apply the Learning Through Creativity

1. The final activity in the research book assesses what they have learned with a creative application. Students imagine themselves as a science professor who recently discovered a new planet.
2. They draw themselves as an 80-year-old retired professor with a biography that they create.
3. They then write new pages for their research book, answering all the same questions as the report on the first planet, describing their newly discovered planet. Students draw at least two illustrations per question writing dialogue as needed.
4. The teacher serves the “professors” as a consultant to support their work.
5. The students present their scholarly publications at parent-teacher conferences or to a fellow colleague in the class.

Reflection

1. What are your best strategies for teaching literacy?
2. What makes learning fun for you?
3. Why did you decide to become a teacher?
4. What talents and skills do you bring to your classroom?
5. What empathy and insight about your students have you gained from challenges in your life?
6. What do you value most about learning and schools, and how can you apply your values to increase your motivation?

Want to Know More?

Search for and read about Bloom's Taxonomy, Webb's Depth of Knowledge, or other theories to inform good questions.

Recommended Leveled Reading Materials: A-Z Readers RazKids, Reading Rainbow, and ReadWorks.

A terrific book for parents and teachers is *The Enchanted Hour: The Miraculous Power of Reading Aloud in the Age of Distraction* by Megan Cox Gurdon.

Chapter 4: Teach Students to Draw

Scott shares this story: *It was 1977. "Star Wars" captivated the country. The children in my 1st-grade class fought with imaginary lightsabers with the power of Darth Vader and the heroism of Luke Skywalker. The kids chose the x-wing fighters, the Millennial Falcon, and Darth Vader's helmet as subjects for our drawing studies. After drawing every day, within a few weeks, I noticed a significant jump in the class average reading ability. I observed individual children for clues to this correlation and identified a wide range of connections. Disparate needs were being met as various abilities simultaneously developed while drawing.*

For many years I have tracked students as they learn to draw, and it is as if I can see the neurons firing to rewire the children's brains right before my eyes! I teach basic drawing so children can learn how to learn while doing something essential that is fun, but the benefits in their development make it essential. As a teaching tool, drawing provides an immediate feedback loop for assessment with results that are visible to both the teacher and student. Success is evident, trial and error inherent, and the visual literacy skills directly apply to reading and writing skills. I was lucky as a child to have access to music and drawing to improve missing skills and abilities. I knew from my own experience that fixing the brain processing is like paving the road for learning. I measure my success as a teacher by my students' ability to read, to think, and to learn, all of which improve markedly when they draw.

The Power of the Arts

For centuries, humans have communicated through the arts. Dance, drama, music, and visual arts are each human languages as valid as spoken words or written text. Each art form uniquely communicates nuances of life experiences. In both the performing and visual arts, works of art reveal the shared values and the essence of the people who lived and produced the art. A person is considered literate in an art form–dance, drama, music, visual art, film–when they have sufficient skills to communicate or understand an original idea through that art form. As the vocabulary of arts skills increases, more intricate ideas can be expressed as well as digested into meaning.

Children use the arts naturally while playing. They explore and discover their world through sensory experiences. They listen, observe, smell, touch, taste, and explore the space around them. From rolling to crawling and eventually to running, they find new places to explore. When they encounter limits, they use their imagination to find new solutions. Each experience searching for solutions contributes to their self-concept. As children's ideas become more complex and they need more ways to express themselves, they need more ways to create, whether through words, music, dances, paintings, etc. The arts become vehicles for expressing ideas with personal nuance. As they continue to participate in the arts, their learning infinitely expands, and the new information extends their thinking and creativity. Arts activities engage students physically, cognitively, socially, and emotionally as described in the lists in Chapter 1. Observing students engaged in the arts reveals their ability in regards to developmental indicators while also reinforcing the improvement of developmental skills, optimizing performance. Children need to dance, sing, role-play, and draw regularly in ways that feel natural to the relationships and the content. There is something in each art form that every child can do successfully. As children engage in the arts, those with deficiencies work at their own pace with individualized strategies. Each art form includes skills that are essential to a complete education. All children benefit from participation in all art forms.

As we learned from Scott's story of his academic challenges, developmental delays, stress, or physical restrictions can impact learning readiness. When left unattended, challenges are compounded exponentially with each passing year. Teachers need to focus on a child's strengths and the weaknesses will improve organically. The areas of challenges my never become strengths, but life is about using our strengths to compensate. Daily participation and practice in visual and performing arts activities can help compensate for processing delays and other challenges.

This chapter will focus on teaching basic drawing, visual literacy and the connections to learning skills, as well as reading and writing skills. These skills will be applied simultaneously in Chapter Seven which is about mind mapping for learning. Many resources are available to help teachers use the arts in meaningful ways in their classrooms and suggestions are offered at the end of this chapter.

Observe learning skills through arts activities

Drawing has an extraordinary impact on developing thinking and learning skills. Studies have shown that comprehension improves for students of all ages when students draw and take notes as they are reading or listening. Drawing helps students learn to see and think carefully, which are essential skills for scientists and mathematicians. Surgeons who are training students in medical schools across the US and Britain have reported concerns that students have diminished dexterity for cutting and sewing in surgery because students are no longer getting sufficient experience performing fine motor skills like drawing, cutting, pasting, crocheting, or sewing. Children need to practice a wide range of fine motor skills that are essential in many professions and in daily living.

Teaching children basic drawing builds on the natural effectiveness of communicating through images. It supports the visualization of new ideas which propels the need to read and write to articulate those new ideas. But it goes beyond this. There is evidence that it improves learning in subjects requiring visual acuity and a lot of memorization, such as anatomy and biology. Jennifer Landin, Ph.D. wrote for Scientific American in 2015 about how she reimagined her biology classes when she realized the principle that when students draw, they remember better and stay engaged longer.

Visual art and music most closely parallel the development of reading and writing by reinforcing fine motor skills, visual tracking, and visual discrimination. When young students are not able to write on a line, it is not always a delay in fine motor skills; it is often a distortion of how they see the space, a skill developed when drawing. Because most children like to draw, it is an efficient way to explicitly teach a variety of skills to benefit all learning.

Learning to Learn

The list below identifies many of the skills, habits, and dispositions for learning that formal drawing instruction can develop. Steps to teach basic drawing are described later in the chapter.

1. Classroom skills:

- Sit in a chair
- Walk in a line
- Observe, notice, and listen
- Follow directions
- Read the board and transfer the information to paper
- Manage your desk, chair, and materials
- Be where you are asked to be and touch only what you are invited to touch

2. Cognitive skills:

- Respond to natural curiosity
- Ask relevant questions
- Distill information/paraphrase
- Prioritize the important things
- Solve problems

- Self-evaluate, correct mistakes
- Expand an idea creatively
- Interpret context clues
- Make connections
- Apply information
- Ask appropriate questions

3. Communication skills:

- Ask for help
- Listen and paraphrase what is heard
- Use eye contact
- Select what to say and when to say it
- Raise your hand
- Stay on topic, or deviate appropriately within the context of topic

4. Habits:

- Review resources
- Concentrate with focus and stamina
- Clean up after yourself
- Leave the space better than you found it
- Regulate personal needs
- Help others
- Respect yourself and others

5. Dispositions:

- Curiosity
- Internal need to know
- Self-responsibility
- Sensitivity to nuances
- Internal gratification through effort
- Work ethic
- Hope for a positive outcome

As teachers teach these skills, they can observe the challenges the students experience and provide activities to improve ability, then provide positive feedback for growth as students improve. Typically, the first half of the year is spent explicitly teaching students to listen, work independently, engage in conversations, and self-regulate for learning. The second half of the year, students discover new freedom as they apply the learning skills they have mastered to various content areas. To optimize the transfer of skills to other content areas, teachers articulate the skill and describe how it transfers to other content learning. For example: “Just as we identified and drew the buildings, trees, and stars in Starry Night, please use your “artist eyes” to describe the details in this story.” Visual art develops ability in physical, cognitive, social, and emotional realms that transfer directly to reading and writing when explicit connections are made.

Teach Basic Drawing

Drawing together as a class, in the framework described below, increases concentration and attentiveness, reinforces learning skills, and integrates developmental indicators in the neurophysiology of the brain and body. Creating a master study is a type of close reading, as the students visit the “text” repeatedly with a new question to solve during each visit.

Drawing is an opportunity to practice many skills such as observation, focusing on the task, fine motor skills, and visual discrimination. Students begin to understand spatial relationships as they arrange objects for a still life or select a scene to draw. Conversations while drawing not only influence what is being drawn, but also invite students to make meaning from the images and analyze and interpret lines, shapes, colors, spatial relationships, etc. Drawing can develop a variety of the following related skills when explicitly taught:

- Increase concentration, focus, and attention span
- Improve hand-eye coordination for holding a pencil and controlling the line made
- Develop eye convergence, visual tracking, and left to right progression
- Increase visual discrimination
- Improve skills for observation and perception
- Arrange spatial relationships with large and small objects
- Break down objects into component parts
- Reflect on the meaning of individual pieces
- Assemble component parts
- Increase the ability to see and interpret line, design, and symbols
- Translate 3-dimensional objects and experiences into a 2-dimensional representation
- Interpret lines and curves in symbol making
- Improve judgment through choices and decision making
- Develop self-authority and ownership of ideas and outcomes
- Create imagery that supports the imagination
- Read and write a series of symbols that have meaning
- Extend verbal conversations into written conversations
- Engage in analysis and deep thinking
- Make meaning from abstract data
- Look at things from different points of view

Guidelines for Basic Drawing Lessons

When drawing a still life or creating a master study of a work of art, a single art project can take anywhere from two to six hours, even when done with young children. Optimally the student’s concentration will work-up to two-hour increments, but an art project can be done in 45-minute sessions. Quality takes time. Be patient. As students increase their attention span and their ability to focus, they will learn more deeply and increase their perseverance,

The students follow along step by step, listening, and following directions. Go slowly so that students have time to think and make decisions. Interact with students while they draw. If

they do not like their choice, they need time to look around at the work of others for options and try something different. Students learn from each other and expand on each other's ideas. It takes reflection to see the big picture and sort and organize information. When the teacher goes too quickly, students copy and put items in the right order, but do not analyze and synthesize information. Quality should be emphasized over quantity.

The cycle of decision-making and reflecting is one of the most important skills students learn during the drawing process. Set a very high standard of excellence for students to achieve and allow the students to decide for themselves how they meet the standard. Remind them to do their best work. The sensory and tactile experience of drawing is soothing to the neurological system. Invite them to relax, reflect, and respond to their ideas to get in the flow of creativity. When they get in the flow, the ideas and images authentically emerge with surprising results. As ideas flow, students experience free association. Conversations diverge and creativity expands. If you notice students who cannot achieve flow or get stuck in flow in a dissociative state, there is likely an underlying vulnerability. Ask them what is going on and work together to optimize their ability in a safe way.

Additional examples can be found at scottflox.org

Use direct instruction to teach procedures and skills. Use strict classroom guidelines for behavior. Have the students work independently in their seat with little talking. Once they are engaged, they can walk around, look at the work of others, relax and re-enter their artwork at their own discretion. Clearly define and teach the procedures to handle all materials such as passing out and caring for paper, chalk, and markers. Explicitly teach students to listen, follow directions, look from their paper to the board, take time to make choices, think, analyze, commit to a decision on paper, reflect on the result of that decision, then move on to sequential decisions.

For example, the teacher might give explicit instructions, such as, "Look at your paper, measure down 3 inches from the top of your paper and 4 inches in from the left side. Sketch an oval the size of your hand. Use light sketch pencil marks in case you need to erase. Now look at the image or at the still life. What do you think we should do next?" As a class, always discuss and reflect on each step of the process and on the final product. Emphasize basic drawing concepts specific to each art piece. Fundamental examples include form, contour, line, shape, shading, color values, outlining, perspective, shadow, foreground, middle ground, background, depth, perception, view, angle of perception, lighting, reflective light, etc. There are many online tutorials expanding on each of these concepts. This format of teaching with

direct instruction is developed for generalist teachers. It prioritizes general learning skills and developmental skills for reading, as well as arts skills. Additional lessons to focus on arts skills and creative expression should also be provided but are not included here. Step by step instructions to teach master studies in this direct instruction format can be found at scottflox.org.

Project guidelines for drawing master studies with chalk pastels

1. Use large good-quality art paper. 18”X24”. Large paper increases the quality of the outcome for children and helps them use space.
2. Determine the order for drawing the picture--generally, begin with the largest shape or object of the picture to use as a reference point.
3. Sketch the entire picture with a pencil and eraser. **Model each step** for the entire class as you draw for the students as they follow along. Go slowly, step by step, so the children can have time to erase and make corrections to meet their own satisfaction. (If a student is struggling, you can draw half of the sketch for them and have them copy it for the other side. Do what you need to help you students be successful.)
4. After the picture is sketched, outline everything with a fine point black marker by tracing over the pencil lines. Pentel markers work well and don’t bleed. Then erase pencils lines, as pencil lead can repel the chalk.
5. Add color using pastel chalk in a variety of colors. Hard chalk is easier to control than soft chalk. It is usually best to begin at the top and work down so that students do not accidentally smudge their chalk work.
6. Teach students to use chalk differently than crayons with varied pressure. Outline each section first with the selected color. Create contour with shading and blending. Teach them how to *blend* with their chalk to fill the space, rather than *color*.
7. Continue dialogue with the class and with individuals while drawing in order to increase their engagement and expand their vocabulary.
8. When finished, spray with fixative and/or laminate to preserve the work. (Note that you should not use fixative spray with black paper.)

Reflection

1. List 3 practices using direct instruction to teach basic drawing and identify a benefit of using it.
2. Compare and contrast teaching visual art this way to the teaching of music, science, or another subject area.
3. How would you teach basic drawing differently to adapt these strategies to your strengths?
4. How would you adapt these strategies to meet the needs of your classroom?

Want to Know More?

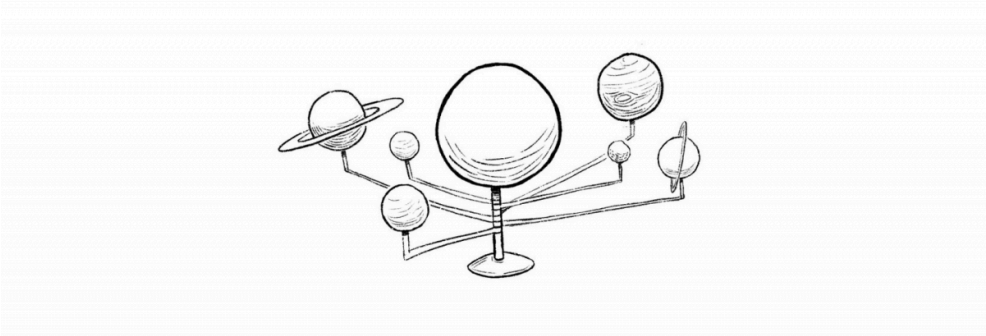
Studio Thinking from the Start: The K-8 Art Educator’s Handbook by Jillian Hogan, Lois Hetland, Diane Jaquith, Ellen Winner

Visual Thinking Strategies: Using Art to Deepen Learning Across School Disciplines by Philip Yenawine

Making Thinking Visible : How to Promote Engagement, Understanding, and Independence for All Learners by Ron Ritchhart, Mark Church, Karin Morrison

The Surprisingly Powerful Influence of Drawing on Memory by Myra A, Fernandes, Jeffrey D. Wammes, Melissa E. Mead. Research article August 30, 2018

Chapter 5: Create Mind Maps for Learning



Scott shares an experience illustrating the value of weaving literacy elements (chapter 3) and art elements (chapter 4) into mind mapping to optimize learning: *It was mid-October, and my 3rd-grade class was studying the eye. We had read about the eye, watched a video, engaged in conversations, and each child was now building a mind map about the eye to demonstrate what they had learned. For the first time that year, every student was fully engaged in creating their work for over an hour. Each student was working on their own map, at their own pace, while incorporating their own ideas.*

Emily was a shy child with an innocence that was accentuated by her buck-toothed grin. She was receiving treatment for delayed verbal skills and was two years below grade level in reading. Her visual perception and hand-eye coordination were competent so drawing her ideas in her mind map allowed her to express herself beyond her vocabulary, which motivated her thinking.

*Emily's deep thinking was visible in the pictures, words, icons, and emojis scribed on her paper and in the inspiring analogies she included. Her eyes sparkled as the ideas ignited and the images emerged. The concluding element of the mind map was to create an analogy about the eye. Emily quietly read to me her analogy at my desk. I knew she had reached a pinnacle of clarity in her ideas. I read Emily's analogy aloud to the class, "The eyes are like a guide to show you the way**."** Emily had exceeded my expectations, but more importantly, she had exceeded her own.*

A critical mistake of the remedial reading instruction I experienced as a child was that the content was over simplified and uninteresting, which caused me to get further behind. I needed the intellectual challenge of ideas that sparked my interest to propel my intellect and capture my concentration until my ability to read could catch up. I could still think at high levels, it was my reading skills that were delayed. I started using mind mapping with fiction and nonfiction text, along with rich daily conversations and analogies, to inspire individual children to demonstrate what they were thinking in broadly differentiated ways.

The stage for Emily was well prepared based on a few foundational principles specifically developed to lead students to successful learning: she felt safe and valued in the classroom, drawing was improving her neurophysiology, conversations elevated her thinking, and clear learning outcomes drove the learning activities. Children like Emily are often discriminated against by current assessment strategies. She was previously unable to demonstrate her thinking because her vocabulary was limited, and her writing skills were low. But after six weeks of participating in a classroom that used mind mapping, she was beginning to trust her own thinking, and her ideas were evolving in complexity. Because of the open-ended questioning strategies, Emily gave successful responses repeatedly and her confidence developed. **She was able to tell the teacher what she knew instead of trying to remember what the teacher wanted her to know, as she was previously conditioned.**

To help children like Emily, teachers can read the children through their behavior, track their growth through data, and see the effects of the changing neurophysiology as they learn to see and to draw. Tony Buzan's Mind Mapping book provides a strategy to see and track how students are thinking as they process information and provide clues to understand how they both assimilate and extrapolate information. By adding conversations while mind mapping, teachers can also inform the evolving thought processes of students. Using Bloom's taxonomy to create questions and activities at each level, teachers can help students move toward the highest category of thinking, which is creating.

As students develop their mind maps, their thinking exceeds their ability to read and write as they draw and use symbols, emojis, and icons to extend their message. The greatest motivator to improve reading and writing is the drive to express complex thoughts and ideas. Students should always be thinking and conversing beyond their reading and writing ability. Mind maps and the conversations about them extend traditional thinking for students to excel beyond any preconceived expectations. This ability to express oneself beyond words is part of why the arts build deep thinking capacity. Mind mapping can activate this powerful concept from the arts into learning in all content areas.

Think and Learn Like an Artist

Arts learning can lead to effective and engaging project-based learning as students create a dance, music, play or painting. This learning is visible, relevant, and individualized. Mind mapping is a venue for all content to be experienced through project-based learning. When teaching through mind mapping, teachers and students work and think like artists. Each time a student creates a mind map he/she is producing creative work, just like an artist does. A classroom becomes a studio for hands-on learning represented in an artifact and students describe and discuss what they are learning. The instructional pedagogy for mind mapping

is similar to the pedagogy for teaching visual arts. The essential components of a visual art classroom are present. The majority of the time is spent with students working on a project; the teacher provides instruction and background knowledge; there is reflection and critique throughout the process; and there is a finished product at the end for exhibition. (See *Studio Thinking: the real benefits of arts education* listed in the "Want to Know More?" section at the end of this chapter.) Each mind map is unique and reflects the individual's learning. Discussing the map with another person provides an opportunity for them to review and teach what they have learned and to reflect on their work.

Artists explore and test solutions through trial and error. Then they carefully refine high-level techniques and use those skills to improvise ways to communicate new ideas. When a teacher teaches with mind mapping, they are also improvising to find the best solutions and refining instructional strategies, including the art of questioning for meaningful conversation. Teachers use their own judgment and perspectives to teach each individual effectively. Likewise, students also refine their thinking and develop techniques to communicate original ideas. Ultimately students have a visual artifact as evidence of what they know and can do. There is an intrinsic reward as they discuss their mind map with their teachers, parents, and friends, nurturing an authentic desire to learn.

As an artist's skill increases, the level of detail and the nuances of the message often increase. Likewise, a mind map surfaces the nuances of thinking. It takes a basic web or graphic organizer, in which ideas are organized on paper in a visual format then adds content and learning standards made visible in drawing and notetaking to propel the visual artifact into a tool for divergent thinking, reflecting deeply, analyzing information, improving comprehension, and building personal relevance for the learner.

The activity of mind mapping is differentiated to meet the needs of advanced students, emerging students, and students with learning challenges in various situations. For example, in a mind map, second-language learners can express advanced ideas with images and use words in the new language as labels. Students with learning challenges compensate by developing alternate communication strategies in areas of strength to convey ideas. Gifted learners are motivated to extend their thinking and develop alternate ideas. Students will differentiate their own learning when they have access to many topic-related books and resources in the classroom.

Mind Mapping for Learning

Mind mapping for learning includes curricular standards and strategic questions to guide learning towards desired outcomes. Teachers can use mind maps to teach and assess basic facts and proficiency in core standards. The illustrations, icons, and graphic representations extend thinking beyond the student's reading and writing ability and help develop abstract ideas. The learning is extended infinitely, as each piece of information becomes a building block to the next set of questions, continually spiraling upward. The student's mind map is a culminating artifact that provides evidence of good teaching and student learning.

To summarize, mind mapping for learning is:

- A practical format for quality instruction and assessment adaptable for every classroom, preschool through adult.
- A strategy to differentiate individual learning.
- A practice to propel thinking beyond student capacity to read and write.
- An experiential learning process that activates imagination, emotions, and open-ended connections.
- A written representation of ideas that includes words, pictures, symbols, icons, charts, diagrams, labels, dialogue bubbles, illustrations, associations, characters, analogies, thoughts, and more.
- A conversation between a teacher and the students.
- A template to teach and assess higher order thinking every day.
- A formative assessment to inform a teacher's instructional decisions.
- A summative assessment for a student to demonstrate what they know.
- An excellent review of material to prepare for standardized tests.
- A strategy to illuminate a broader range of skills than is currently being assessed in most classrooms.

Why does mind mapping for learning work?

Mind mapping is an effective tool for learning because:

- It provides evidence of student learning that students can describe and discuss.
- It rewards self-directed learning, independent thinking, and choice-making, allowing each student to connect with the prescribed curriculum in a personalized way.
- It applies Bloom's taxonomy, teaching basic skills that lead to higher order thinking skills, culminating in creating a product.

- It applies and improves visual literacy.
- It allows teachers to incorporate their own strengths and personality into their classroom.
- It allows teachers to personalize instruction to each individual as they build relationships with students.
- It provides an immediate feedback loop with individual students.
- It illuminates the deep thinking of students as they discuss and describe their mind map to peers, teachers, and parents.
- It activates divergent thinking, invites creativity, and increases the number of related ideas leading to broader contextual understanding.
- It activates convergent thinking as students describe specific ideas from the curriculum.

Activities to include in a Mind Map

Each activity listed below should be taught explicitly in various types of lessons, including guided and shared reading, as well as being taught and applied in a mind map.

- Draw, illustrate or use icons, colors, shapes, symbols to depict ideas
- Summarize, paraphrase, describe, and sequence events
- Make lists
- Make a table to compare and contrast facts and ideas
- Identify cause and effect
- Draw tables charts, graphs, and diagrams, including Venn diagrams
- Write relevant mathematical equations
- Describe what happened
- Predict what might happen next
- Add photocopies of artifacts such as inventions, uniforms, weapons, strategy maps, and label each image
- Add dialogue bubbles
- Draw arrows for sequencing
- Include printed photos or images
- Deconstruct images with labels and descriptions
- Add analogies, metaphors, and ironies

General Sequence for Mind Mapping:

1. Put the topic prominently on the page
2. Add a representation of the main ideas, characters, or events
3. Indicate what happened
4. Indicate the significance or the impact of what happened
5. Indicate why you think it happened (purpose and context)
6. Indicate a personal connection or relevance to your own life
7. Include a connection to the future and/or to the past
8. Add an analogy

The weird and wacky things in history and life are essential for engagement and should be included in the conversations while mind mapping. Find the odd stories from the fringes that

add interest about what happened. Identify the ironic twists and turns of fate. Finding and discussing the irony introduces ambiguity and drives deep thinking. **It is the weird and the wonderful that keeps learning fresh and inspirational.**

For example, when studying the Civil War, the 3rd grade students in Mr. Flox's room create 20-30 pages of mind maps about the war and related concepts. The students remember particular details and recant the stories to classroom visitors. Favorite facts include happenings that are peculiar, coincidental, or ironic, such as:

- The war started and ended at McLean's Farmhouse.
- There is a photograph of John Wilkes Booth attending one of Lincoln's speeches before the Civil War started.
- The only time Ulysses S. Grant was considered successful was as a general. He failed as a businessman and had a scandalous presidency.
- The abolitionists who broke laws to hide slaves were often religious leaders.
- Robert E. Lee was also asked to lead the military effort for the north, but he chose to fight for the south because he was loyal to Virginia.
- President Lincoln wanted to hear the song "Dixie" the day the war ended.
- When Robert E. Lee and Ulysses S. Grant met at West Point, Grant remembered meeting Lee, but Lee did not remember meeting Grant.

From this intriguing perspective, students authentically make connections to similar situations and leaders, in history or present day. Students become prepared to discuss current news and review what is happening in the world from various perspectives.

Students think at levels well beyond their ability to read and write. A desire to share their ideas as well as to learn more about the experiences and thinking of others is the best motivator to improve reading and writing skills. Mind mapping illuminates the thinking of children at every level in learning and allows them to share elevated ideas. When students can show what they know with images, icons, symbols, and words, every student can demonstrate their most complex ideas.

Scott describes an example of evidence of differentiated learning. *Courtney and Addie love working together, both creative yet one talkative, the other more reflective. They playfully challenge each other. On their mind maps they began cutting rectangles of paper and gluing them to their mind map, so they opened like the windows or doors on an advent calendar. They called them "trap doors" and added them whimsically. Inside they added details about a person or topic and recorded jokes or secrets. Their civil war mind map had trap doors with 3-D surprises that popped out like a canon bomb or fireworks to celebrate a victory. These quirky surprises are why I like being around kids.*

Mind maps can be created about literature, history, science, or social studies. Information is provided during reading instruction, watching documentaries, examining visual images, listening to pieces of music, watching plays, etc. For example, Mr. Flox shows a Ken Burns documentary on the Civil War while the students create a mind map and Mr. Flox stops and starts the video to have strategic conversations. During instruction, new conversations emerge between pairs and trios in the room and students converge as a group as the teacher directs.

As the teacher and students mind map, each person builds on their own strengths, makes decisions, and develops their judgment. The learning environment is transformed into a collective of individuals, each responsible for their own learning while enriching and supporting each other. Many needs of the gifted student and the resource student alike are addressed simultaneously through these student-centered strategies that invite open-ended answers for broad differentiation. Students decide where they want to go and how far. As a foundational piece of any classroom, mind mapping for learning interweaves effective teaching and learning strategies, making the job of the teacher and learner more rewarding.

Second grade teacher Glenda Butikofer shares how the culture of her classroom changed with mind mapping to encourage authentic discussions: “In my first mind mapping lesson, I was teaching about states of matter. I planned on talking about solids, liquids, and gasses, but as we got into our discussions, one of my boys that struggled to read and could not write legibly, raised his hand to let me know that there were other forms of matter, and told me all about plasma and related topics. My belief about what this boy could learn changed in that moment. I began to push learning to higher levels to engage all kids successfully. Using mind mapping, all kids can be successful, even the ones that struggle to write information down.”

Thought Mapping for Teacher Planning

Thought mapping is what teachers do to lead student thinking and connect concepts. Building a thought map clarifies the thinking that teachers want students to demonstrate in their mind maps. A thought map is the teacher’s lesson guide or outline for the lesson plan. This includes related core standards, selected learning outcomes, and key concepts. It provides the questions, prompts, and ideas of how to lead students through making a mind map. The thought map can also include “sample things to say” as described in the examples in the next section. Teachers should craft questions from each level of Bloom’s taxonomy and plan a related activity to do in the mind map to reinforce that skill: remember, understand, apply, analyze, evaluate, create. A mind mapping lesson should include the elements listed and defined below.

- **Stories** provide context, relevance, and personal connection. Personal stories instigate relationships, increase vulnerability, engage empathy, and allow us to compare/contrast our own experiences with those of others. In the classroom stories can be personal, historical, fictional, fantasy or even technical and non-fiction.
- **Non-fiction information** helps people understand the content of stories. Learners often need to check a dictionary definition or look up geographical/historical information to understand what actually happened in a story. The story piques curiosity for information about the world.
- **Questions** ignite curiosity, the most powerful motivator for learning. Open-ended questions evoke deep thinking. Directed questions guide students to selected learning outcomes.
- **Personal reflection** internalizes the information and the story, uncovering opinions, thoughts, and questions. Learners evaluate and internalize the information according to their own experiences.

- **Conversations** emerge from personal reflection as individuals seek answers to questions, listen to the thoughts and ideas of others and share their own. Words are metabolized into meaning through well-constructed conversations.
- **Background knowledge and extensions of information** include definitions, historical or geographic context, biographies, famous incidents, inventions, oddities, non-fiction information, theoretical frameworks, and any information that connects to the content being learned. Personal stories also provide background information. The more a student knows about the world, the easier it is to learn new information. Likewise, teachers who continually read about historical and current events are best prepared to make relevant real-world connections in the classroom. Suggested readings on topics related to this book are included in the text.

Steps for Teacher Planning

1. Select the topic you want to mind map about.
2. Create the essential questions to guide the learning. (An essential question restates the desired learning outcome in an interrogative format.)
3. Create a list of core standards, required background knowledge, inspiring ideas and guiding questions about the content for the teacher to use as a cue sheet while teaching.
4. Create a fact sheet for students to use listing what the students need to know as well as additional relevant information (15-30 items).
5. Gather the needed information from various sources, videos, images, original source documents, leveled readers, etc.
6. Apply the instructional strategies listed on page 62 to teach the needed information.
7. Create a mind map specifically about the selected topic.

Mind Map Checklist for Literature

The primary purpose of mind mapping with literature is to illuminate thinking to improve the quality of conversations. Drawing gives students time to think, to analyze, and to assimilate information. In a classroom, students can draw and think simultaneously, but need to take turns speaking and listening. Preparing students with individual thinking and drawing time leads to more meaningful dialogue. Creating mind maps simultaneously, as a group, models for students a respectful balance between thinking, listening, and speaking time. Students get ideas from the mind maps and questions of others to add to their own work. As the conversations improve, so do the questions students ask. Creating quality questions encourages curiosity, which develops life-long learners. View student samples of mind maps.

Steps for Mind Mapping Literature	**Sample Things to Say and Do**
Identify and label the topic for the mind map. This could be the title	*Put an icon, word, or other representation of the topic on the page. Put it in a space where you have a lot of room*

of the book or the main idea.	*around it.* *Read the first and last sentence of this paragraph, then read the whole paragraph to determine the main idea.*
Identify the pieces of information that need to be included on the map. This could be characters, events, facts, setting, author, etc. Add a representation of each piece of information.	*Who is this story about? Put a picture, icon, or label on your paper about each of the main characters. Add dialogue bubbles to show what the characters would say or think.* *What is the setting?* *What were the main things that happened? Show evidence by including quotes, dialogue, or images.*
Further illustrate the pieces.	*Continue to illustrate and label each part of the story as you continue through the book. How does the setting change? How do the characters change? Discuss the cause and effect of why the character changed. What are the ramifications of the events in the story?*
Sequence the pieces as you develop the map.	*Add arrows or numbers to identify the order in which things happened.*
Develop extensions to the illustrations or words.	*Chart, graph, icons, Venn diagram -- What can you add that will show the idea more clearly and/or provide more detail?*
Make connections/apply knowledge.	*Make connections to background knowledge (see Chapter 7 for example frameworks for background knowledge), connect to other curricular standards, connect to other literature, identify similar facts, concepts, and themes, identify these connections through illustrations or words on the map as well as in conversation.*
Summarize and extend thinking.	*Add an analogy, simile and/or a metaphor to the map that connects to student knowledge.*
Engage in conversations and discuss the mind maps throughout the creation process. Give students feedback.	*In a whole group discussion, invite students to share with the class their metaphor for their mind map. Invite an individual student to explain their reasoning for including a certain image or portion of their map.*
Add additional ideas and representations until complete.	*Is there anything else you can add? What's next?*

When preparing for mind mapping, help students organize their thinking by making a cause-and-effect chart. The chart can be labeled in two columns: cause and effect, or for a different perspective, list three columns: facts, adaptations and ramifications. List the facts of the story being discussed. List how the character or situation adapted to the events in the story. Summarize what the effect was. What were the ramifications of what happened in the story?

Fact	**Adaptation**	**Ramification/effect**

Mind Map Checklist for Science

The primary purpose of mind mapping with science instruction is to assimilate facts and information into personal meaning and to move the information into long-term memory through illustration and dialogue. The information can be from short paragraphs, reference books, internet sources, or movies. Various sources coalesce in the map. A mind map can also serve as an outline for a research project, and the strategies can be used for the students to write a book with illustrations as an extension to go deeper into a selected topic.

Steps for Mind Mapping Science	***Sample Things to Say and Do***
Identify and label the topic for the mind map. Is it an event, person, item, or phenomenon?	*Put an icon, word, or other representation of the topic on the page. Put it in a space where you have a lot of room around* it.
Identify the pieces of information that need to be included on the map. Add a representation of each piece of information.	*Function: What is the purpose or role of this item or occurrence? Identify the related parts.* *Events: What are the main things that are happening?* *Facts: Read the text, watch the video, observe the experiment and then paraphrase the factual information about the item or event. Write it on your map.*

	What are the ramifications of this item/event existing or not existing? Is there a cause and effect relationship? Describe how this item/event could adapt to changing circumstances.
Develop extensions to the illustrations or words. Give students feedback.	*Go online, find and print-related diagrams, maps, charts, illustrations, etc. Cut and paste them on your mind map. Label and describe all the parts and draw connections to other items on the mind map.*
Summarize and extend thinking.	*Write an analogy about a topic or an idea from your mind map that connects the data to student knowledge.*

Mind Map Checklist for Social Studies

The primary purpose of mind mapping in Social Studies instruction is to internalize the information so students can personalize and humanize the historical situation and experience. Another purpose is to illuminate and track the institutional and personal thinking of decision makers to improve the understanding of cause and effect. A variety of sources should be used: original documents, books, articles, images, videos, internet etc. Additional extensions are discussed in Chapter Six using contextual frameworks.

Steps for Mind Mapping Social Science	***Sample Things to Say and Do***
Identify and label the topic for the mind map. Is it an event, animal, item, phenomenon?	*Put an icon, word, or other representation of the topic on the page. Put it in a space where you have a lot of room around* it.
Identify the pieces of information that need to be included on the map. Add a representation of each piece of information.	*Characters: Who does this situation impact or involve? Put a picture, icon, or label on your paper about each of the main characters and/or groups of people. Add dialogue bubbles depicting what the characters would say or think. Do a character study of each individual.* *Events: Identify the significant events both public and private.* *Facts: Identify the relevant geography, policies, cultural, or other facts that impact this story.*

	What were the ramifications of decisions or situations that occurred? How does this situation or decision impact people, society and the world?
Develop extensions to the illustrations or words. Give students feedback.	*Go online, find and print related diagrams, maps, charts, illustrations, etc. Cut and paste them on your mind map. Label and describe all the parts and draw connections to other items on the mind map.*
Summarize and extend thinking.	*Write an analogy about a topic or an idea from your mind map that connects to student knowledge.*

View student samples of mind maps.

Assessment

To assess students' work on their mind maps, consider these criteria:

- Evidence of each type of thinking on Bloom's Taxonomy
- The depth of the abstract connections they make
- The use of space e.g. filling the page, both positive and negative space
- Formatting of their illustrations with labels and/or captions
- Adding illustrations to labels, titles, and terms
- Details shown in either illustrations or explanations
- Connections made from other discussions in various subjects, novels, and guided reading facts and so forth.
- Connections to personal experiences
- Other divergent thinking ideas represented
- Effort--did they exceed their expectations or yours?

Reflection

1. What inspires you to create?
2. When do you feel creative in your classroom?
3. Which ideas from mind mapping describe what is already happening in your classroom?
4. Which ideas would you like to add to your classroom?
5. Make a mind map about you. What describes and defines you?

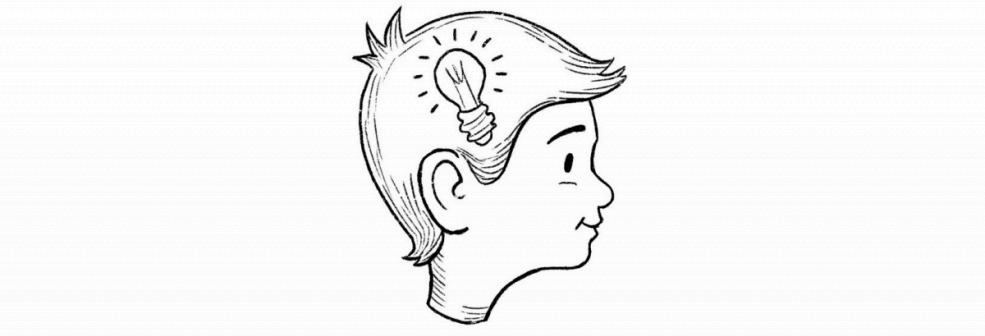
Want to Know More?

Mind Mapping by Tony Buzan

Creating Meaning Through Literature and the Arts by Claudia Cornett

Studio Thinking: the real benefits of arts education by Lois Hetland, Ellen Winner, Shirley Veenema, Kimberly M. Sheridan

Chapter 6: Conceptualize Big Ideas



Scott remembers finding new ways to help students connect ideas: *As the classroom conversations grew in complexity and deepened in meaning I needed a way to connect all of the conversations to universal themes. I found an answer when I read* Guns, Germs, and Steel *in which Jared Diamond identifies and describes the foundations for building a civilization, which I adapted and posted on the wall in my room. The list inspires relevant questions about why things are happening and helps students predict what might happen next in a situation we are studying from life or a book we are reading. To help students understand and predict the choices and actions of individuals, I discussed Maslow's hierarchy of needs with the class. Through these frameworks, students compared the similarities and differences from their lives to the people in fictional and historical stories. Through these conversations, students began to see that lives are crafted by the choices people make as they respond to existing circumstances and situations. Students identified patterns and made connections and associations to other content and their own lives. In my experience, when the children learned to think in this way, they far exceeded the expected learning outcomes in open ended and personalized ways, applying information well beyond the criteria for mastery of the tested standards.*

Provide Context

Learning happens by making connections through patterning and/or associations. Identifying patterns helps students find information that transfers across various situations.

Student learning deepens when they make relevant associations to background knowledge and experience. Students with broad and diverse background knowledge can put information into context and relate it to their own lives. The conversations while building a mind map provide missing background knowledge by weaving together details and information (the individual parts) with established cycles and systems (the big picture) of life and living. Teachers should identify necessary background knowledge as part of their planning and provide time to teach/review it. As an exmple, here is a link to one teachers list of background knowledge as she created a novel study for *A Wrinkle in Time*.

Conceptual frameworks provide necessary background information that many students are never taught. Having a framework helps students understand how internal and external factors influence the decisions people make in their life by propelling or prohibiting their options. Two frameworks that provide significant background knowledge and context are recommended for use in the classroom (although other frameworks of overarching concepts can accomplish this purpose). First, a list of building blocks of civilizations and second, Maslow's Hierarchy of Needs. Both of these frameworks can be easily used in any classroom for all ages.

Framework 1: Building Blocks of Civilization

According to the book *Guns, Germs and Steel, The Fates of Human Societies* by Jared Diamond, the progress of a society can be tracked through various indicators, some of which are summarized and categorized here. For classroom use, Scott calls this list the **building blocks of civilization**.

1. Water supply: devise irrigation or other methods for easy access to water
2. Tools: devices to make work easier
3. Natural barriers: oceans, mountains, weather, and other natural forces
4. Agriculture: devise systems to produce food for the masses (nomadic people don't establish an infrastructure as they move to follow the food supply)
5. Architecture: building shelter congruent with the existing influences
6. Economy: cheap labor, currency, political system, taxation
7. Culture: laws, traditions, rituals, religion
8. Military: complex tools, technology, to protect what they have created or to expand to gain additional resources

To understand how the building blocks of civilization connect big ideas, consider what happens when a group of people move into a new land. They need efficient ways to meet their basic needs. They develop tools to make their work manageable. The tools could be boats for moving food between islands, plows for planting seeds, or axes for cutting wood. The most desirable land is where people settle first, near water, as it is essential for survival. With ingenuity, people create systems for providing water for an entire village, town, or city.

Their next concern is to create strategies to feed the people. How people get food is determined by the terrain where they live. Are there fish in the waters, animals on the land, or edible plants? How long is the growing season? What are the other natural forces that impact their lives? The answers to these questions will determine the types of homes they build. Next, their economy will develop with a system of exchange to obtain items they can't provide for themselves. A social and political order emerges to govern themselves. The people will unite through their traditions and create laws according to their shared values and religion. As people succeed, they may find a need to protect what they have or seek ways to expand resources and possessions through military efforts. These cycles have played out in various scenarios in human societies for thousands of years.

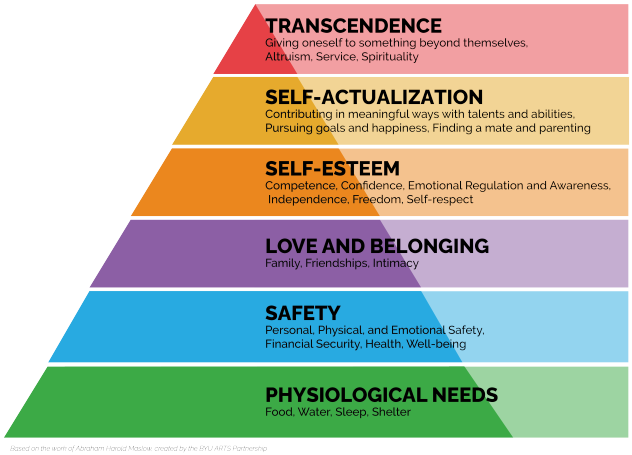
Understanding this framework allows deep thinking about why things happen the way they do and why people respond the way they do. Without these big picture frameworks, the information students learn is left as individual pieces that are unattached to life experience and logic. It is a missed opportunity to teach students facts about history, humanity, and science without showing them the cycles and systems that influence the evolution of humanity. With this kind of scaffolding, students can begin to identify patterns of human behavior and shared experiences across the world. The building blocks of civilization can inspire questions for discussions including how each stage relates to the next and comparing and contrasting various civilizations.

Framework 2: Maslow's Hierarchy of Needs

To further understand the human nature and behavior of people in all civilizations across time and space in a more personal context, teachers can draw from the theory of Maslow's Hierarchy of Needs. Abraham Maslow theorized that people's basic needs are met in six stages that build upon each other sequentially. As health and safety increase, people seek

relationships, improve their self-confidence, and then can contribute to others. An understanding of how Maslow's Hierarchy of Needs provides context for why people in history or in a work of literature may behave in a certain way. This list provides the basic elements of each level.

1. Physiological needs: food, water, sleep, shelter
2. Safety: personal, physical, and emotional safety, financial security, health, well-being
3. Love and Belonging: family, friendships, intimacy
4. Self-Esteem: competence, confidence, emotional regulation and awareness, independence, freedom, self-respect
5. Self-Actualization: contributing in meaningful ways with talents and abilities, pursuing goals and happiness, finding a mate and parenting
6. Transcendence: giving oneself to something beyond themselves, altruism, service, spirituality



A great deal can be learned by analyzing characters in books, plays, movies, or other stories using this framework. Understanding why people are the way they are and how they solve their problems provides important modeling for readers to understand their own behavior and motivation and more about how the world works. Human needs are not only relevant for everyone's needs and development but also for society.

To understand the motivation behind people's behavior, the teacher can ask questions such as: What was the character's primary concern? What did the character need before he could solve the problem? How did the character evolve through this story? What is the character's greatest conflict?

Maslow's Hierarchy and the building blocks of civilization can be interwoven with questions such as: Why would people leave where they live to find a new home? How would people act when food is scarce? How could the people make themselves more comfortable? Why would the people build homes or grow food the way they do? What are the primary influences on the decisions being made?

Applying these Frameworks to Mind Mapping

With these topics, teachers can introduce mind mapping for learning. First, mind map the geography of the world: continents, oceans, major rivers, mountain ranges, and port cities. Talk about how each of these things affect the people who live there. Once oriented to maps, students can refer to them regularly to find where people are from and where events occurred. Basic geography is essential information to put both history and current events into context. Next, the students are ready to learn about the building blocks of civilization and Maslow's Hierarchy of needs by making a mind map while the teacher provides direct instruction about each one and leads a discussion. Although it may seem more intuitive to use these frameworks with older students, remember, Mr. Flox used these frameworks for first graders, significantly developing their thinking and understanding.

When studying literature, students can find a deeper understanding of the setting and of the development of each character by referring to these frameworks. Even an imaginary location is brought to life by asking about the waterways, buildings, and agriculture of the people. And the motivation and evolution of characters can be better understood. When students are writing, they can use the building blocks as a checklist to select items they want to describe their story and Maslow's Hierarchy to develop their characters.

One theory that describes why these practices work is the Teaching for Understanding Framework developed by faculty at the Harvard Graduate School of Education. This framework is a guide to build educational understanding while allowing teachers flexibility to design their own units. Further study and application of this theory will help teachers refine their instructional skills. The four key principles include:

1. **Select generative topics**. This can be literature, themes, concepts or topics that inspire students and extend their thinking.
2. **Select overarching year-long goals with embedded nested goals as through lines.** Overarching year-long goals may include learning to think, work independently and cooperate in a community. Nested goals may include standards-based learning outcomes selected for the grade level.
3. **Demonstrate understanding through performance--what students do or say.** Students can make their learning visible to others learning through drawings and mind maps as well as other activities such as conversations, stories, and through the performing arts.
4. **Use ongoing assessment.** Use what students produce to formatively assess their understanding along with formal types of assessment.

Sample Script for a Mind Map about *Charlotte's Web*

The setting of *Charlotte's Web* can be analyzed by using the Building Blocks of a Civilization. What motivates the people in this story? Do they have water and agriculture? What kinds of homes do they live in? Do they have money and comforts? How would you describe their culture? What is the primary need/problem of the people in the story?

For example, the themes in the novel *Charlotte's Web* include cycles in life such as seasons, human development, and birth and death. The cycles are used to describe what happens in the book. In Dr. Dorian's words, "You are born, you live a little and then you die." Another theme is how people explain things they do not understand. The setting is an established farming community. The characters are expanding in their beliefs, which is #7 on the building blocks of civilizations list. Fern's basic needs on Maslow's Hierarchy are met, allowing her to develop her relationships and her intellect. Discussing the story, in terms of the patterns in these frameworks, helps students understand the commonalities of civilizations and people around the world. In this way learning can transfer to universal principles that connect humanity.

When discussing *Charlotte's Web*, teachers can build a mind map so students can process the information and have a tangible representation of their learning as a summative assessment. The following script is provided as an example of questions and possible answers that could propel the discussion. Samples of first- and third-grade mind maps are found at www.scottflox.org.

Elements of Mind Mapping	**Sample Script**	**Possible Answers**
Identify and label the topic for this mind map.	*Write* Charlotte's Web *in the center of the page.*	
Identify the pieces of information that need to be included on the map. This could be characters, events, facts, setting, author, etc. Add a representation of each piece of information.	*Name each character, make an icon of an idea that describes each character.*	
	What was the first major idea in the book?	Farm life has its own set of rules. Fern is a caretaker.

Sequence the pieces as you develop the map.	*What happened first?*	A runt was born. Fern wanted to take care of the runt. The runt was moved to Zuckerman's barn.
	What happened next?	Wilbur meets Charlotte.
Include thought bubbles for characters.	*What did Wilbur think of Charlotte when he first met her?*	He thought she was blood-thirsty and cruel.
	Why?	Because she ate a fly in front of him.
	How and why did his perspective change?	Charlotte explained that she eats flies to survive.
	How did Fern treat the pig?	She treated him like a human baby.
Further illustrate the characters and events.	*Why is Charlotte mysterious?*	Because Wilbur hears voices as she talks out of the darkness, and he has to wait a while until he meets her.
	How has the farm changed since the beginning of the story?	It started in spring and now it is summer.
	What is the bad news?	When Wilbur finds out he is going to be dinner.
Make inferences about the characters.	*Why do you think Mr. and Mrs. Arable think Fern needs to see Dr. Dorian?*	Because she talks to animals.

	What is she learning in the barn? Notice that she learns more from listening and observing than from talking.	The life cycle of animals and how they live.
Find evidence of the facts within the text.	*What is Wilbur's problem and how does he feel about it?*	He doesn't know how to save himself and he is scared.
	What is Charlotte's plan to save Wilbur?	She will write words in her web.
Study related vocabulary.	*Define the word miracle.*	Something you can't explain.
	What miracle happened in the barn?	A word appeared in the spider's web.
Further illustrate the pieces.	*What was the second word they decided to spin?*	Terrific.
	Define the word faith. How does faith go with Charlotte's plan?	Faith is people believing in things that can't be proven. People often make up stories about things they don't understand. Charlotte said people are gullible and will believe it's a miracle so they'll want to spare Wilbur's life.
Do a character study. Describe characters, give them thought bubbles, etc.	*Describe Dr. Dorian.*	Dr. Dorian has a beard, he is a medical doctor, he is pragmatic and discusses the natural parts of life with an overall understanding of human nature and the natural order of things. Dr. Dorian represents E. B.

		White and looks a bit like Sigmund Freud.
Continue using arrows to sequence the events in the book.	*What happens?*	Mrs. Arable asks him if he understands how the words in the web appeared. Dr. Dorian says no he doesn't and says, "I don't know how a spider can spin a web in the first place," and he says the web itself is a miracle. Mrs. Able says, "I don't understand it and I don't like what I don't understand". Dr. Dorian says, "I am a doc- tor and I don't understand everything, and I don't let it worry me." "If people would talk less, animals would talk more. And people would learn more."
Make connections to other curricular areas.	*What is it called when you know how to do something without being taught?*	Instinct.
	Give another example of instinct.	When animals make shelter, hunt for food and protect themselves. (Refer to Maslow's hierarchy of needs.)
Include quotes along with illustrations on the mind map where it is helpful.	*Dr. Dorian mentions Henry Fussy. "There will be a time when Henry Fussy is more interesting to Fern than the animals in the barn." Why did he say this? What did he mean?*	To put the situation in perspective. Life cycles go on and nothing stays the same. Time is passing.

Expand the thinking.	*What is the significance oft he song "Summer is Dying"?*	Spring is rebirth, summer is growth, change and abundance.
Make connections to other curricular areas.	*Write and discuss a descriptor for each season that is reflected in the story.*	Fall is when life gets harder and can be compared to when people age. Winter represents death.
	Illustrate Wilbur's dream and tell about it. What do you think this dream really means?	
	Why are Mr. Zuckerman and Arable going to the fair?	She got dressed up because she wanted to see Henry.
Use diagrams and charts to show student's thinking.	*How has Fern changed?*	Describe various indicators of growing up.
	Who predicted this? Why is this significant?	Dr. Dorian predicted this, showing he is wise and knowledgeable.
Further illustrate the pieces.	*What is happening to Charlotte and Why?*	She is getting tired because she is getting old. Discuss life cycles.
	Who won the blue ribbon? And what did Wilbur win?	Uncle won the blue ribbon. Wilbur won a special ribbon, but more importantly he developed friends and personal understanding about himself and his life.

	What did Templeton find? And why is it significant?	Templeton found the word humble and it means low to the ground and not proud.
	What did Charlotte mean when she said, "Maybe you will live forever."	Charlotte wrote it in her web for the last time. She was telling him she is going to die.
Include diagrams/charts to show student thinking.	*Describe Charlotte's life cycle.*	
Invite students to imagine and add to their map.	*How is it the same or different from yours?*	
	Name 5 ideas you learned from this book. Draw an icon to show how they relate to you or not.	
Give opportunities for students to make their learning personal.	*List characteristics of a friend. What kind of friend do you want to be?*	
	Define supernatural.	It is beyond what they understand.
	Who did the humans think wrote on the web?	People create stories and ideas to explain things they don't understand. People are afraid of things they don't understand.
Connect to background knowledge.	*How does this relate to Greek Mythology (or other previously taught content in your class)?*	
Include a metaphor.	*What is the main theme of this book?*	Life is like the changing seasons.

Everything in life has cycles, seasons, nature, animals, and people.

What have you learned about yourself?

This guide is only an example because each script should be an individual teacher's personal creation. The subtlety and nuance included in the script are part of the artistry of teaching. Possible answers are offered, but remember, while your questions are specific and nuanced, the students' answers may be varied, more complex, and dynamic. Answers can be anticipated, certain answers can be expected, but students will provide answers that may be surprising. However, no matter how surprising, **if the students can justify their answers with clear connections, that is what matters.** The connection is the critical component and can be made known through an illustration; it does not have to be verbal. That's why the icons, images, and diagrams embedded in the mind map, as well as the dialogue related to these elements, are so important. **The connections the students are making between the ideas expressed and in conversation are more important than the answer.** This type of teaching allows a broader way for students to show what they are thinking, rather than "circling" the letters A, B, C, or D. It lets students show what they know and what is important to them rather than trying to select an answer that seems arbitrary.

Many who have watched Scott teach marvel at the high ability of the students' work, including those with special needs. Parents observing first grade conversations about *Charlotte's Web* often report the conversations exceeded those in their college courses. A group of 20 principals observed his class one day and believed his 3rd graders were 5th graders because of high level discussions about the Civil War. They were captivated by the artwork on the walls and the book reports they reviewed. This skilled teacher exceeded what the principals conceived was possible. Several acknowledged his giftedness as unique personality traits and questioned if other teachers could be successful with his strategies.

While it is true Scott is gifted, when other teachers apply these same techniques, the students also grow by leaps and bounds. The beauty is that the theories and techniques are replicable and can be adapted to fit any teacher's style and gifts. Scott has been presenting professional development workshops since 2006, working with hundreds of teachers. Just as with his students, he helps the teachers find their strengths to bring to the classroom. None of them teach exactly like Scott, but they use the principles they learned from him and grow tremendously.

Reflection:

1. List several external influences on your school and classroom resulting from the geographic region and the culture of the school.
2. How do these influence impact the school and students where you teach?
3. What are the opportunities?

4. What are the challenges?
5. What do you believe is the purpose of public education?
6. Compare and contrast your beliefs from the beginning of your career to now.
7. How do your beliefs about public education influence your work?

Want to Know More?

Teaching for Understanding: Linking Research with Practice edited by Martha Stone Wiske

The Teaching for Understanding Guide San Francisco: Jossey-Bass. *Blythe, T. (1997)*

Guns, Germs and Steel; The Fates of Human Societies by Jared Diamond

Making Learning Whole: How Seven Principles of Teaching Can Transform Education by David Perkins

Mind Map the Book to Review the Content

Now you have a chance to summarize what you have learned by creating a mind map of Timeless Teaching, one chapter at a time. The key learning outcomes are provided in a thought map to emphasize specific ideas, primarily to model how a thought map guides the creation of a mind map. Use the thought map provided to guide your thinking while you create a mind map. The teacher uses the thought map as a reminder to include required information that may be assessed or that the teacher deems essential. The creator of a mind map adds what is important to them and prioritizes the learning according to their value system, which will help them remember the information.

As you were reading, you were invited to increase comprehension with the following literacy strategies: summarize, paraphrase, define vocabulary words, make a list, compare and contrast, make a Venn Diagram, draw icons, draw a chart, and imagine how you will apply the information. Along with your internal conversation, consider having a verbal conversation with a colleague or friend about the ideas in this book. Reflect on your conversations. Notice how the conversations surface new ideas and deepen the meaning of concepts recorded on the mind map. (This reflection is similar to the formative assessment teachers do while working with students, as they reflect on and direct the conversations.)

The steps/prompts listed below are only suggestions. Follow your own thinking and record what you are learning in words, drawings, diagrams, and icons. Allow the ideas to flow and emerge.

1. Write “Timeless Teaching” in the center of the page.
2. Identify the chapter titles, write them on the page where you choose and describe what each means to you.
3. Add additional descriptors/aspects of timeless teaching and what each means to you.
4. What are the overarching concepts that connect all the information?
5. What does it mean to get a good education?
6. How will you implement concepts you have learned into your classroom?
7. What do you now envision for education that you had not considered before?
8. Write two analogies

A mind map is like a _____because_____.

Learning is like a _____ because_____.