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Chapter 8

Thinking Maps® for Special Needs

By Cynthia Manning, M.Ed.

Supervisor of Thinking Maps at Learning Prep School, Newton, Massachusetts

“Thinking Maps Give Me A Chance to Learn”

Learning Prep student

Ralph Waldo Emerson wrote that “The task ahead of us is never as great as the power behind us.” For many students with severe learning disabilities and for all of those students who never make it out of the lower tracks of our educational processes, the task ahead is often daunting and perceived by many as insurmountable. They never see the power behind them: their self-concept is low because they rarely if ever *see* and fully apply the power of their own abilities to think through content information, conceptual challenges and even social problems. The task of explicitly improving students’ cognitive abilities and language performance toward a higher order—and empowering students who often are perceived as incapable of improved thinking and learning--is being accomplished at our school because of the power of Thinking Maps behind our students, faculty and parent community.

Thinking Maps is one of the most powerful tools that Learning Prep School uses to facilitate learning for students who have been unable to succeed in other educational environments. Four years ago, we felt we served our students well, but they were not where we knew they could be in their daily performance and their abilities to perform on the Massachusetts exam, the MCAS. We now *see* the significant results of our students’ performance through the use of these visual tools as integrated into our overall program, and students can *see* themselves differently, as independent learners capable of “getting it”, as one student declared:

“Thinking Maps give me a chance to learn. I couldn’t get it when one of my old teachers talked to me all day and then wanted me to write a lot of words. At this new school, I can understand the teachers when they use the maps. And I can finally do the work because I get it!”

This qualitative and quantitative view of our experiences shows how Learning Prep began by implementing Thinking Maps in our elementary through high school curricula and then fully integrated these tools consistently and flexibly across grade levels and content areas to give students with learning disabilities clear pathways to think on their own and process information independently.

Background on Learning Prep School

All Learning Prep School (LPS) students have language-based learning disabilities as their primary challenge. Many also have tangential issues or diagnoses which interfere with their ability to learn, such as a lack of social communication skills; attention deficit disorder; and visual, perceptual, auditory processing, or motor deficits. Because of these challenges, most students who enter typically demonstrate a two year delay when compared to peers who possess age-appropriate academic skills, and they are unable to utilize reading as a functional learning tool. Direct teaching methods, language strategies, and coordinated adaptive and social services are employed consistently to help students become independent learners; in order that they may lead productive lives, students also master the skills necessary for independent living. On the average, 90 percent of Learning Prep’s graduating seniors progress to college, vocational training, or post-high school transition programs. Learning Prep provides services to 360 students in its elementary, middle, and high school programs. Since 1970, it has been the only school specifically designed for language-impaired students within the region. Students, many of whom live in inner cities, come from over 130 communities throughout Massachusetts, New Hampshire, and Rhode Island. A quarter of the LPS population includes students of African-American, Hispanic, and Asian descent.

Because of the unique and diverse learning challenges students’ possess, Learning Prep must carefully examine potential curriculum programs. Each approach must be flexible, focused on skill development, able to accommodate a variety of modifications and accommodations mandated by IEPs, and most importantly, be effective instructional tools.

Thinking Maps initially appealed to the school's director, Nancy Rosoff, because they complimented the curriculum and could be utilized at any academic level. Nancy was impressed by the Thinking Maps as a model and the objectives of implementing the tools: for students to be able to use the tools—based on thinking processes—to extract salient information from different forms of text and present it clearly and concisely in a visual context. She also came to believe that the success of implementing Thinking Maps into any educational setting is dependent upon having one person who is certified as a Thinking Maps Trainer to be responsible for program coordination for teachers, students, and parents. My role as Supervisor of Thinking Maps in Learning Prep has enabled me to support the implementation and comprehensive use of these tools throughout the entire curriculum. This position has also given me a unique opportunity to observe and then document how the maps may be used with flexibility and depth across this whole learning community.

As we have progressed over the years and evaluated the effectiveness of Thinking Maps, it has become mandatory for all staff to use the maps as a foundation for teaching and learning. This fits into the implementation design first established in 1990 by the professional development group, Thinking Maps, Inc. Thinking Maps is normally introduced as a common language for whole schools that requires an initial training and follow-up coaching for all faculty to ensure that the focus on implementation is on the sustained use of the tools by all students over multiple years as they move between and among teachers across disciplines and grades. Of course, this focus on school wide use makes eminent sense for Learning Prep, because the tools are based on *the direct facilitation of specific cognitive skills* which is an essential part of the primary mission of the school. Beyond the core curriculum, the maps are now infused in all aspects of the student's school life, including occupational and speech therapies, electives (such as computers or art), pre-vocational classes, counseling, and social skills groups. Without this consistency, Ms. Rosoff believes, students will identify the maps only with a certain subject area or therapy and will not be able to make the generalizations or transfer of cognitive skills that ensure learning.

This comprehensive vision of the power of Thinking Maps as a language for the school has led to teachers, students and parents receiving ongoing coaching and support over the past three years as summarized below.

Teachers receive ongoing instructional training and an orientation workshop is given for all new teaching staff. Refresher training sessions and meetings on curriculum development for all returning staff occur during the year. Supervision of staff is given as needed to integrate Thinking Maps within all aspects of curriculum, which includes observations of all staff to ensure that maps are being taught and integrated correctly and to the maximum capabilities. This supervision is supported by the use of model lessons using Thinking Maps within classrooms to demonstrate consistent and deeper uses related to the different needs of students.

Students receive an initial introduction to the maps and Thinking Maps Software by their teachers. Tutoring sessions for new students identified as having specific learning needs, and refresher training and reinforcement exercises for all students occurs at the beginning of each school year which focuses on each of the eight cognitive processes and maps, and how to use the maps and frame of reference in each discipline.

Parents are offered two training sessions during the year to help reinforce the maps and Thinking Maps Software within the home environment and community. These sessions support further meetings with parents as needed to develop maps for targeted use within the home (e.g., chores, homework, task completion, vacation planning, budgeting income from after-school jobs, etc.) Regular communication with parents and students via the web and a monthly published newsletter ensures that parents are aware and actively supporting Thinking Maps use at home.

Many prospective parents have expressed a strong interest in Learning Prep because they have read about Thinking Maps on our website, and they hope that the maps will benefit their children by teaching them to organize and process information more efficiently. Ms. Rosoff, as Director of the school, believes that Thinking Maps oftentimes have been instrumental in helping to gain the interest of potential students and their families. In fact, Ms. Rosoff believes that “Thinking Maps have been responsible for putting Learning Prep on the map.”

Developing the Fundamental Psychological Processes through Thinking Maps

According to the American Psychological Association’s **Journal of Experimental Psychology: Learning, Memory, and Cognition**, there are ten basic psychological processes: *cognition, knowledge acquisition, memory, imagery, concept formation, problem solving, decision-making, critical thinking, reading, and language processing*. Without continuing

development of these characteristics, learning cannot take place. Thinking Maps have been essential in helping Learning Prep develop our students across these characteristics and metacognitive abilities, thereby demystifying learning, increasing intellectual capacities as measured by increased MCAS scores, and enabling our students to engage in higher order thinking. A close look at these processes related to Thinking Maps shows the versatility of these tools.

Cognition includes our “fund of information about the world and our mastery of problem-solving skills”, in addition to executive functioning skills, which are “our capacity to initiate, sustain, inhibit, and shift in our problem-solving efforts” (Bolick, 2004). Children with low cognition scores have difficulty with input controls (“sustained attention to preferred tasks”) and output controls (“sustained effort regarding topics of interest”) (Levine, 2003). This salience determination – what is important to maintain attention, develop executive functions, and complete tasks – is especially challenging to individuals with low cognition because they may not be able to self-regulate to eliminate what is irrelevant or identify what is salient. Consequently, input control can be difficult; they do not know what to look for or listen to without their attention being framed accordingly, but as one of our students noted, “It’s easy for me to pick out the important parts of something and put them in to a map. Sometimes I use Thinking Maps for work without even knowing it – I just draw them automatically.”

With output control, it is easy to assume that because a child may not be able to demonstrate cognition, knowledge is not present. This inhibition of output merely indicates that the child cannot encode and “show what he knows” (Bolick, 2005; Levine, 2003). Another student reveals, “I have trouble coming up with information without them, when all I have in front of me is a blank sheet of paper and a whole lot of questions to answer. When I draw a map to answer a question, it’s easier for me to remember information. It’s almost like having a teacher there to cue you. They help me work independently.” This comment leads us to another misconception which parallels that of cognitive output control and this is *memory*. Many people, including parents, mistakenly equate rote memory with knowledge. However, if children cannot integrate and apply their knowledge, then learning connections are not being made, and the disparate details cannot be encompassed into a gestalt that is meaningful, relevant, and informative (Bolick, 2005). These two comments by students reflect a common view among our learners using the maps: “They keep all your good ideas in one easy place so

you don't lose them," and "They turn a whole bunch of information that gets me confused into a few simple steps."

For LPS students who show "low cognition" as identified by specific test items that isolate certain cognitive skills and levels, Thinking Maps have been an essential tool for success. This shows that these students, who may be perceived in other settings as having a static intellectual capacity can shift to higher order thinking through the use of Thinking Maps when used as tools for cognitive mediation *over time*. In addition to being taught in all academic subject areas, maps also are utilized by elective vocational classes which can present a challenge to these students by their lack of structure normally present in an academic classroom. The maps assist with salience determination and self-regulation; they provide the necessary structure and a visual component that is easily transferable (allowing generalizations to be made and learning connections to be established). Thus this student could say: "The maps help me identify what is important and what isn't. If it doesn't fit in the map, then it's not important. They also help me stay focused so I can get my assignments done; they're easy and fun to draw, and they're kind of like a puzzle. I don't need to worry and stress about if what I did is correct. I can read over my map and know if I did it correctly or not. They're easy to proofread." When students are able to demonstrate increased input controls – sustained attention and task completion – because they understand the process (such as **how** to complete a map), the cognitive load is lowered and thus their minds are freed to focus on **knowledge acquisition** (**what** to use to complete the map) and further develop and demonstrate their cognitive skills.

Other aspects of cognition – visuospatial processing, visuomotor output, and sequential processing – also affect children's awareness of their bodies in relation to other objects, making them clumsy and unable to complete certain motor tasks. These functions furthermore impact their ability to attend to multi-step tasks, recall sequences, and understand parts-to-whole (or whole-to-parts) relationships (Bolick 2005). The use of the Flow and Brace Maps, in conjunction with scheduled Occupational Therapy sessions on campus, have assisted our students greatly by increasing their ability to complete these motor tasks. Thinking Maps are integrated into treatment plans, allowing students to immediately understand what they will be working on and why. By incorporating the facilitation of a metacognitive stance in an OT setting, students are better able to plan and execute a task as well as evaluate their progress.

These kinds of processes require students to analyze a problem or a topic, as one student conveys explicitly in this comment: “Thinking Maps help break down topics. I can express my ideas using them, even though I can’t do that with essays. They make things easy to understand, and I use them to help me study.” Another student surfaces the importance of organizing information, a key dimension of executing complex tasks such as writing: “The maps make me a stronger writer. I never was able to write before I learned the maps. But now I get main ideas and supporting facts; the way the maps are drawn and organized helps me to see these things now.” Thinking Maps software has also been distributed to students, allowing them to customize the maps to their lesson requirements and for writing assignments. The software has proven to be a particularly effective accommodation for dysgraphic students who have difficulty constructing the maps independently.

An additional component of cognition that impacts students with learning disabilities is higher-order thinking, which includes *problem solving, critical thinking, and concept formation*. It has been a joy to hear students in our school respond as this one did recently: “Thinking Maps get me to think.” Difficulties with higher-level cognition arise as these children increase in years. They often surpass their peers at rote academic tasks common in early elementary grades, and their self-esteem is based upon their clever reputation. As they begin to encounter academic failure in the fourth or fifth grade, coinciding with an increase in tasks that require higher-order thinking processes, children with learning disabilities can feel depressed or anxious. Written expressive skills are deficient, inferential knowledge is challenging, and predicting or estimating can be impossible tasks for these individuals. Learning inevitably is impeded by the child’s inadequate cognition (Bolick, 2005).

One of Learning Prep’s main goals is to increase cognitive development. As our students become fluent in Thinking Maps, they are able to develop their cognitive skills and metacognition, to “think about thinking,” and apply these cognitive skills to problem-solve and develop higher level, abstract thought. The value of these tools is that when students begin to choose which map they are going to use it is not a random decision: it is because of the thinking that *they* see is required of the task. As a student observed: “I love Thinking Maps because I can choose which one I want to use sometimes. That makes me feel like I’m responsible for my learning. And some kinds of learning are easier for me than others. This way I get to learn how I learn best.” By doing so, some students have been able to progress

independently to a more complex level of map usage – using multiple maps in unison to solve multi-step assignments. In March 2004, after demonstrating competency with all eight maps, teachers and students were trained in multi-mapping, or using two or more kinds of maps together to organize information. This strategy is particularly effective at facilitating higher order thought. Because the maps draw on the integration and application of multiple thinking processes, the concepts presented are elevated from the concrete level to abstract and inferential patterns of thinking, thus developing higher level cognition.

Another direction staff have taken is the development and reinforcement of skills using cooperative learning strategies to teach Thinking Map lessons. Interactive activities, or group work, augment cognitive skill acquisition using a method that facilitates social skills development. As shown in the training manual for Thinking Maps, these tools can help teachers mediate student behaviors through conflict resolution. One student recalled that “I got into a fight with my best friend, and our counselors used maps to help us work things out. I realized why I shouldn’t tell lies about her when I’m mad at her.” Learning how to work with others is a life skill that is equally important as mastering curriculum, and cooperative learning is an effective way for students to learn turn-taking, role-playing, self-control, cooperation, responsibility, and problem-solving skills.

Imagery can be difficult for learning disabled students, but using Thinking Maps to break down stories and make them more concrete also has enabled students to form mental images of people when using Bubble Maps for characterization. One student commented that “I see my Thinking Maps, and what they contain, in my mind, when I need to remember the information for tests or quizzes. If I just have a large page of notes, I can’t remember the information as easy. Because I drew the map and used it as a study guide, I can remember the information and see it in my head when I need it.” A clear example of this capacity to visualize information and connect the visual to the verbal is shown in a high school student’s multiple Thinking Maps used for comprehending a story by P.R. Giff, *Pictures of Hollis Woods*. While rarely do students use all of the maps at one time for comprehending text, this is a high quality example of how students may become fluent in being able to use all the maps at any time, independently, to surface patterns of thinking from linear text. (figure 8. Pictures of Hollis Woods).

Because decoding and encoding language is challenging for all of our students, they often balked at one of the most critical basic processes, *reading*, in addition to writing open responses to short answer or essay questions. Anxiety can set in and sabotage their ability to complete the task at hand. Students might know the structure of a paragraph, but when they have to integrate that knowledge along with decoding what the question is asking, they become easily and quickly overwhelmed. If, however, they recognize the thinking process within the context of the question—and the reading text structures—they can relax and focus their efforts on understanding the question. The student example shown in Figure 8. shows how basic text structures such as comparison, narrative sequencing, and causes and effects of main events in a story become both visible and accessible for students. The dual coding and processing of the vocabulary and visual structures of cognitive patterns reveal the practice and effectiveness of nonlinguistic representations for learning (Marzano and Pickering).

This kind of depth of processing and fluency with linking content specific questions with cognitive processes and Thinking Maps has a direct impact on students responding to isolated questions on a test. For example, if the prompt reads, “Explain the main causes of the Civil War as well as its effects on slaves,” a student who is fluent with Thinking Maps will immediately associate the cues “causes” and “effects” with a Multi-Flow map and begin working. Before students had learned the maps, they would struggle, refuse to work, or even experience an emotional melt-down. Now students will attempt to complete the assignment independently. Their familiarity with the maps provides them with the structural knowledge necessary for task-completion, and with that familiarity comes increased self-esteem. “I know how to answer questions now,” one elementary school student proudly reported this year. Maps also are an integral part of teaching *Wilson Reading Program* lessons in reading and language arts classes as students rely upon the completed maps to help reinforce concepts and phonetic rules, and they file them in their binders as reference tools.

Language processing has been perhaps the most important fundamental process for our student population. Because they all possess language-based learning disabilities, this is the area in which they are most challenged – and this deficit has repercussions on all other aspects of learning. Students might be highly effective decoders, but if they cannot comprehend what they are reading, then they cannot process or organize the information which they are reading, and learning does not take place. Another difficulty our students experience is that they know

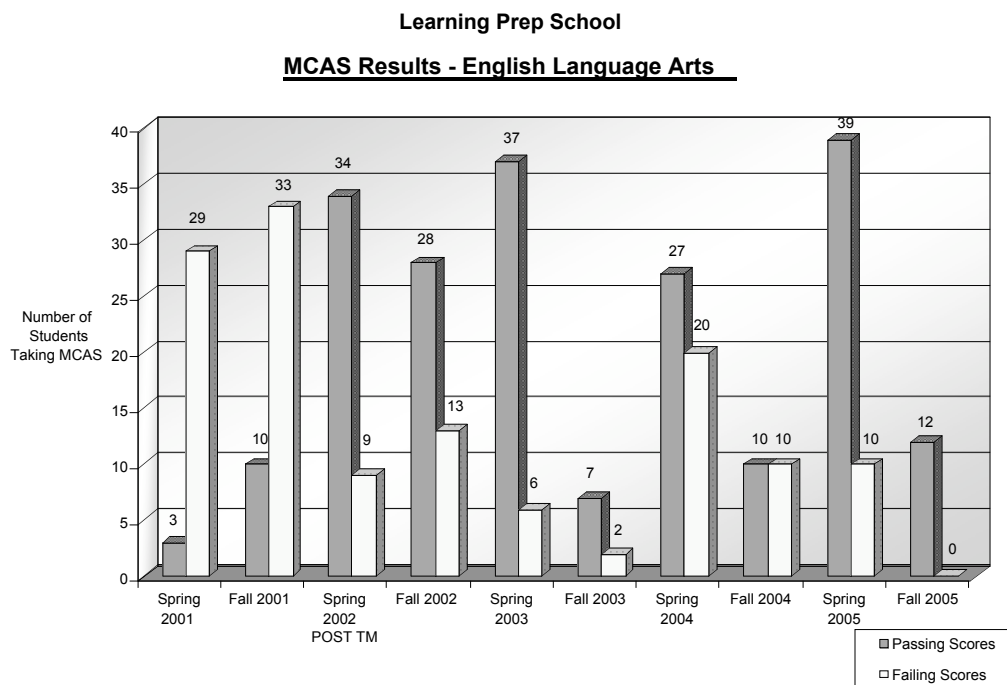
the information in their minds but they are unable to communicate effectively what they are thinking. One student stated what could be true of most students using these tools: “They help get the ideas out of my head and onto an empty sheet of paper.” Thinking Maps have facilitated learning for our students in both oral expressive and written expressive language; they are able to process speech or written text more easily when interpreting it through the context of the common visual language they share with their teachers and develop interactively with their peers.

Thinking Maps and High Stakes Testing

Thinking Maps are best validated when the results can be quantified. Learning Prep has been tracking student progress using scores from a high stakes test, the Massachusetts Comprehensive Assessment System (MCAS) exam, as an indicator of cognitive development. The majority of test scores since the implementation of Thinking Maps indicate an increase in receptive and written expressive language skills, such as comprehending, processing and organizing information.

Since December 2001, when the introduction of Thinking Maps had been completed, students have become fluent with all eight maps, using them to analyze information and develop writing assignments. When taking the MCAS exam, a majority of students use various maps to answer both open response and multiple choice questions. Prior to the introduction of Thinking Maps, students would demonstrate low frustration tolerance levels and heightened anxiety, writing protest messages in their answer booklets instead of attempting to answer the questions. Now that students have a familiar strategy that helps them tackle the open response questions, they are significantly more calm and confident during test administration. Angry statements have been replaced by paragraphs or essays responding to the English Language Arts writing prompt. In the last three years, not a single complaint was written on the test, nor did any student experience an MCAS-related emotional meltdown. It is important that students perceive that the Thinking Maps directly affect their performance in classrooms, as one student stated “Thinking Maps make good study guides. I used to get C’s and B’s on tests, but now I get A’s and B’s.” and that they also influence their performance on high stakes testing, as another student noted: “Thinking Maps make work easier and less stressful for me – especially tests and the MCAS exam.”

Before Thinking Maps were introduced, most Learning Prep students were unable to pass the MCAS exam. For the Spring 2001 Mathematics test, four students passed, and 28 failed; on the English Language Arts test, three passed, and 29 failed. For the Fall 2001 Mathematics test, five students passed, and 41 failed; on the English Language Arts test, ten passed, and 33 failed. For the Fall 2001 Mathematics test, five students passed, and 41 failed; on the English Language Arts test, ten passed, and 33 failed. As shown in Figure 8.1, after the students had been able to learn all eight maps, the numbers dramatically reversed.



For the Spring 2002 Mathematics test, 24 students passed, and 19 failed; on the English Language Arts test, 34 passed, and nine failed. Since the introduction of the maps, there have been eight MCAS exams administered; students overall have fared better on the English portion of the exam as opposed to the Math. On 50% of the Mathematics tests administered, the number of students who passed exceeded the number who failed, whereas on 87% of the English Language Arts tests administered, the number of students who passed exceeded the number who failed. We are proud to report that, for the first time since Learning Prep began administering the MCAS exam, 100% of the students who took the English Language Arts portion of the Fall 2005 test achieved passing scores.

Learning Prep administrators have observed that the most notable change in the results was the increase of students who not only passed, but who achieved *advanced* scores (ranging from 260 to 280) or *proficient* scores (ranging from 240 to 258) on the Spring exams (Fall exams are re-tests that are condensed versions of the MCAS). Prior to Thinking Maps, only a few students were barely able to pass, scoring in the *needs improvement* performance level (ranging from 220 to 238); the vast majority of our students failed the exam, with scores of 218 or below. According to the Massachusetts Department of Education’s **Guide to Interpreting This Report** (which accompanies all MCAS score reports), students who are able to score *proficient* “demonstrate a solid understanding of challenging subject matter, and solve a wide variety of problems”, and those who score *advanced* “demonstrate a comprehensive and in-depth understanding of rigorous subject matter, and provide sophisticated solutions to complex problems”. There was also substantial improvement in the levels of reading comprehension, higher level cognitive thought, and written expressive skills, as evidenced by the continued rise in open response scores, increasing from 0, 1, and 2, to 2, 3 and 4 (with 0 equaling *low* and 4 equaling *high* ratings).

Thinking Maps are one major difference that account for the increase in test scores. When Thinking Maps are integrated school-wide throughout the curricula, as they have been at our school, test scores demonstrate considerable gains. Additional benefits, other than improved scores on high stakes testing, have become apparent throughout Learning Prep and have been documented through student work and in interviews as referenced above, and faculty observations over time:

- Students and teachers share a common language that improves communication and facilitates the learning process.
- Students are developing a higher level of thinking (application and evaluation) while working on recall and comprehension skills.
- Many students’ attitudes have become more positive toward learning.
- Most students have demonstrated improvement in their ability to organize thoughts.
- The quality of learning has been taken to a higher level, as activities have become more meaningful and relevant.
- Many students demonstrate a greater retention of knowledge.
- Improved quality and increased quantity of writing has been observed by teachers.

- Teachers who have used Thinking Maps to plan lessons and develop curriculum have noted improved organization and focus.

Teachers and Students See the Success

An integral part of the program’s success is due to teachers embracing the maps and realizing how instrumental they can be when teaching. Nancy d’Hemecourt, an LPS high school teacher of Language Arts and Literature, is one of their most staunch advocates: “After much modeling (direct, explicit instruction or spiraling review) and practice (generated during classes and for homework assignments), students are empowered to expand their thoughts from low-level thinking to higher level thinking. Not only are the maps great for assignments at home and during class, they also aid tremendously when writing a five paragraph MCAS essay.”

Gia Batty, Department Chair for Literature in the high school, believes that “the maps provide a language that we all speak together – teachers, students, counselors, administrators. This language allows us to converse about our thinking and writing in a visual and organized way. When we use the maps, we are essentially thinking in the same way. This is pretty amazing when you think about it – to be standing in front of a bunch of kids who all think and learn in vastly different ways, and then to use the same map on the board that they are all visualizing in their minds. The maps are wonderful and versatile teaching tools.”

When asked why they thought Thinking Maps were so beneficial, teachers in the elementary, middle, and high schools agree that they are highly effective for teaching students with varied learning styles. Differentiated instruction is one methodology utilized at LPS; the average class size is six students in a homogenous group. If a teacher is introducing fractions, but one group is comprised of visual learners, and another has strong auditory processing skills, the instructional methods used to impart the content can vary substantially. *Thinking Maps are flexible enough to be used with all kinds of learners who possess a variety of profiles*, because the maps are not just visual, they are visual-verbal-spatial frames that support all learning modalities.

When I polled 186 Learning Prep students to find out how the maps helped them learn, the most popular answer given by 124 students – or 67% of the student body – was that “Thinking Maps help me organize my writing.” Some students replied that “answering the

question is too hard; can I draw a map instead?” Almost a third of the students – 58 children – first drew a map and used it to formulate their response. Many students stated directly that Thinking Maps were very effective for them during MCAS test.

Thinking Maps and “the Real World”

One aspect of our school that is different from most others is that we offer a five year high school program. Students attend their standard freshman and sophomore years, and then spend much of their middle year preparing for working and attending school on alternate weeks during their junior and senior years. This work/study program enables students to be better prepared for “the real world” by imparting job skills, identifying realistic educational and career goals, teaching strategies for self-advocacy and disclosure, and providing additional structured time for the student to develop compensatory strategies in school as well as in the workplace. This transfer of the tools outside formal academic work was noted by one student who said: “Thinking Maps help me to not only be a better student, but they make my whole life easier. I use them for everything at home, too.” According to Lois Gould, the Supervisor of Transition Planning, Thinking Maps have been highly beneficial with:

- _ transition planning (now mandated by the government)
- _ formulation of advocacy statements
- _ appropriate accommodation requests within the workplace
- _ job counseling and coaching
- _ processes of conducting job searches and succeeding in job interviews
- _ task sequencing
- _ senior portfolios (used for transition planning and college admissions)
- _ career education classes
- _ job searches
- _ identification of personal learning styles
- _ assistance with matching skills and abilities with interests
- _ development and application of social intelligence and acceptable behaviors that foster social interactions
- _ the mastering of transferable skills for specific jobs
- _ recognition of what is essential to success in the workplace

Some students choose on their own initiative to utilize the maps outside of school – at home, in an after-school program, with a tutor, in religious education classes, or in outside therapy. Parents of LPS students have been impressed by their children’s willingness to use the maps in other environments, demonstrating fluency and total integration of the maps into their repertoire of problem-solving strategies; that the children can recognize on their own accord the effectiveness of these visual tools is a powerful testimony to their efficacy. Some children draw maps to help them choose a family pet or what activity to do over the weekend; others rely on a laminated map task card with instructions on how to make an after-school snack or complete a household chore. A middle school student recently used a series of maps to help him during his Bar Mitzvah, and another student has been drawing maps in outside counseling to help her accurately express her feelings about a difficult family situation.

In Conclusion

After LPS students become fluent in Thinking Maps as a common visual language for learning, they are able to apply multiple thinking skills to problem-solve and develop higher-level, abstract thinking. By implementing this language school-wide across the curricula, students learn more effectively and efficiently, thus enabling learning objectives to be covered in less time and with greater retention. In addition to promoting integrated thinking and interdisciplinary learning, Thinking Maps are utilized by teachers to assess student progress, gauge student knowledge, track student performance, and even assess their own teaching lessons as they discover what students have learned from class by viewing the maps.

These powerful tools combine to comprise a comprehensive, cognitive-based visual language that works in every grade, in every subject, and at any level of academic activity. This is because the focus is on the fundamental cognitive processes defined and activated by each map. Students are able to organize and see their own thinking; teachers can then use the completed maps to observe the students’ thinking processes and assess student language and content learning at the same time. This dual lens—thinking processes and knowledge content—enables the kind of feedback and in the moment assessment rarely found in schools, and has become a foundation for success in our school. As our students continue to internalize the thinking processes taught within the context of the maps, we believe that additional benefits

will become increasingly evident as we evaluate our approach. We greatly anticipate watching our students grow as they become more fluent with this language for learning.

Harkening back to Emerson's quote, many if not all of our students can say with self-assurance and with a determination rarely shown by students with special needs that ... *the task ahead of us is never as great as the power behind us*. With Thinking Maps as a common language of visual tools in hand and behind us as tools for mindful teaching, learning, and assessing, we have empowered our children to think for themselves, and maybe most importantly, *to think about themselves as especially adaptable thinkers and high achieving learners for the rest of their lives*.

References

Bolick, T. (2004). *Asperger syndrome and young children: building skills for the real world*. Gloucester, MA: Fair Winds Press.

Bolick, T. (2005, October). Clinical and educational assessment. Lecture presented at Antioch New England Graduate School, Keene, NH.

Banks, C. (2002). *Learning Prep School overview and student profile*. Retrieved December 9, 2006, from the Learning Prep School website <http://www.learningprep.org/>

Levine, M. (2003). *The Myth of Laziness*. New York, NY: Simon & Schuster.

Add: Marzano and Pickering

Add: *Thinking Maps: A Language for Learning* (Thinking Maps, Inc. Hyerle, 1995; Hyerle and Yeager, 2007. in press)

