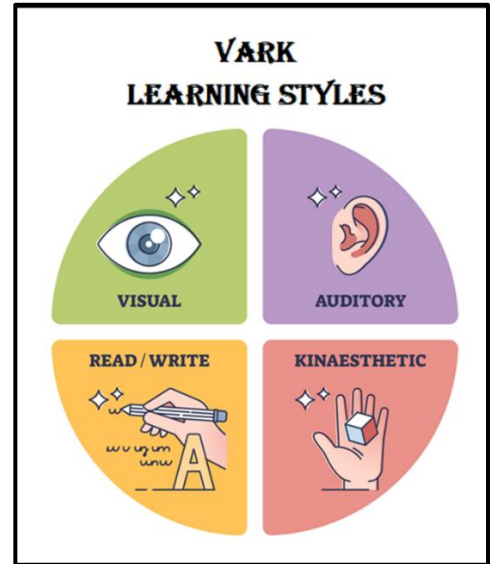


# ‘Writing’ – An Overlooked Learning Modality

By Blaine Helwig

There are four (4) primary ways humans of all ages learn selected skills or applications – *thinking* (metacognition), *talking*, *writing*, and *doing*. Each modality appears to use our brain in a different manner, but all four modalities can be efficient and effective in remembering things we learn.

When I was a public-school teacher and administrator, I repeatedly heard the learning style acronym – VARK. VARK is an acronym that means **V**isual, **A**uditory, **R**ead and **K**inesthetic. Over time, I dropped VARK and instead, I stressed ‘thinking, talking, writing and doing’ since they included VARK *plus* thinking and talking – as modalities in learning styles. Note: I also believe that any lesson that is *well designed and taught with efficacy and accountability* will be well received by the vast majority of learners – **regardless of a person’s predisposed learning style**. However, combining learning style modalities for any type of lesson in association with accountability and sufficient repetition greatly enhances students’ and adults’ mental ability to process and master core learning objectives.



Generally, individual skills are easier to learn and ingrain into long-term memory than an application. An application is a little bit trickier to master/learn since it usually involves the process of combining at least two discrete skills or tasks simultaneously. Two or more discrete skills must be individually mastered or the learner is cognitively overwhelmed, and it is difficult for either an elementary student or an adult to learn *developmental* applications. Finally, and importantly, there is an essential need for repetition in the learning phase. If kids (or adults) are attempting to master specific skills or applications and storing that information into their long-term memory, there must be threshold and repetitive practice of that task – or simply put, mastery will not occur.

## Why doesn’t ‘doing’ also include *thinking, talking and writing*?



The ‘*doing*’ aspect of the four (4) modalities I listed is a bit of a catch-all in my elementary teaching world; hence, I include listening, seeing, reading or a physical kinesthetic movement in the ‘*doing*’ category. Of course, we are ‘*doing*’ in each of the other three (3) modalities (i.e., thinking, talking and writing) as well. However, I am trying to isolate the learning process to elementary school core subjects like math, language arts or science, and generally speaking, thinking, talking and writing are internalized actions – emanating from the brain. Whereas, listening (auditory), reading and seeing (visual) information are more intercepting and interpreting external data cues. Accordingly, I believe the same is true for kinesthetic learning in an elementary school – the student is responding to an external cue, but with a physical movement that assists them in learning a vocabulary word or a specific math or science process. Of course, there is overlap to internal and external cues in all four forms of learning styles; however, for simplification reasons, I separate the design of a lesson and student engagement into these four areas – thinking, talking, writing and doing.

## *Kinesthetic Learning Qualification – ‘Doing,’ too!*

I do not want the reader to confuse learning to square dance, playing basketball or learning to play the piano **with general kinesthetic instruction or learning in an elementary school**. Yes, all three of those examples are kinesthetic movements as well; yet, again, I am isolating the kinesthetic learning process of ingraining a separate task through a short physical movement. In dancing, playing an instrument or playing basketball, tasks that are associated with many physical movements to learn or acquire complicated, sequential movements. In comparison, an elementary mathematics or science teacher is providing an external visual or auditory cue, and the student is responding by using a *subjectively defined* kinesthetic movement to aid in mastering a specific vocabulary word/concept such as parallel, perpendicular, density, weathering or erosion. Moreover, and for further clarity, kinesthetic learning can also be applied to a process or concept. For example, let's assume students are learning the three physical states of water as ambient temperature increases. In that case, three (3) different *subjectively defined* physical movements in both *combination and sequence* may be



employed to demonstrate, as the temperature increases from below 0° Celsius to above 100 °Celsius, water physically transforms from a solid (ice) to a liquid (water) and finally, to a vapor (gas).

In this situation, kinesthetically, children can squat with their arms tightly wrapped around their bodies (e.g., simulating water in solid or ice form), and as the temperature increases, their bodies elevate vertically to a half-standing position with arms waving horizontally (e.g., simulating water in a liquid form). Finally, as the temperature continues to increase, children can slowly transition to a fully upright posture with their arms held vertically upward and their hands opening and closing to indicate the transfer of atoms from water to a gas (e.g., simulating water in a vapor form). Note: ‘Subjectively defined’ is emphasized in this kinesthetic example since each teacher or group of students can choose different kinesthetic representations for each of the three physical stages of water. However, independent of those choices, the science lesson’s learning objective remains unchanged. Importantly, the students’ kinesthetic movements for each physical state of water occur based on an external cue from the teacher – increasing of the ambient temperature from below 0° Celsius to above 100° Celsius.

## ***Adults use Writing as a Learning Tool, too!***

Although this short writing is focused on elementary and middle school learning, adults also use writing as a memory tool when they desire to learn and acquire information. So, why and how do adults utilize writing as the means to remember and recall stored information?

Many professional people keep a journal, not just as a record, but to record events as they occurred. It aids their memory in recalling the sequence of events. Personally, if I want to remember something in particular, I write it down – meaning, I physically write it on a piece of paper. When I was in college, I took notes in my classes. Then, after class, I rewrote my class notes to ensure I not only remembered lecture content, but I mentally mapped the material in context to previous lectures.



Recently, I watched the Netflix series “Quarterback” that featured three professional players – including National Football League (NFL) star quarterback Patrick Mahomes of the Kansas City Chiefs. It was surprising to learn the level of complexity that an NFL quarterback must employ in play calling while leading the offense on the field. An NFL quarterback is required to memorize and apply a series of 4 to 6 quick descriptive (usually nonsensical code words) but complicated phrases for **each** offensive play in a game. In order to accomplish this task, Mahomes wrote and rewrote the descriptive phrases in varying series – repeatedly – until he possessed automatic recall of the information. The plays changed each Sunday depending on the defensive style of the Chief’s opposition; consequently, each week, Patrick Mahomes was required to master a completely new series of offensive plays. For Mahomes, physically writing the Chiefs’ offensive plays repeatedly each week is an effective strategy to processing and sequencing large quantities of information until automaticity is achieved.

*In general, the physical act of writing appears to cue our cognitive memory function, and we are able to store information for better recall. As an elementary educator, I noticed the same positive effect that the physical act of writing has on student learning; therefore, I incorporated writing into many of the curricular resources I designed for both instructional resources and core lesson design. In summary, **for learners of all ages, the physical act of writing is a powerful learning modality!***

### *How about Elementary Student Learning Via Writing?*



Elementary students require many of the same following elements to learn age-developmental skills or applications as adults: clearly articulated sequencing and instruction, at least one or more learning style modality, concentrated engagement, and a threshold number of repetitions (e.g., spaced repetition and spiraling) to achieve mastery.

In elementary classrooms, most veteran teachers recognize that their core lessons require *more than* visual and auditory learning styles as well as spiraling content – if their goal is for students to retain lesson content and information into long-term memory. Students must also be talking, writing, thinking and using kinesthetic physical movements or the probability is exceedingly low that lesson content will be retained for longer than one class period.

Listed below are seven (7) elementary and middle school examples where the physical act of writing is employed as a learning modality to heighten student learning and master important core content.

- 1. Spaced Repetition** – mathematics and science (for instance) – is a highly effective and dynamic instructional methodology for any age of student. Prior to the core daily lesson, the teacher engages students with a quick, dynamic review (e.g., 3 to 10 minutes) of current content or prior grade level skills (as needed) to ensure that **ALL** students exceed the minimum number of repetitions required for student content mastery. This instructional strategy employs visual, auditory, reading and writing modes of learning.
- 2. Science or Math Journals** – A daily writing record or journal is an extremely beneficial tool in student learning. This daily work sets in motion a sequential pattern of content that is easily reviewed and augmented, as needed by the teacher. In mathematics, students should not only perform skill level calculations, but they should physically write the key ‘takeaways’ of the core lesson to clearly demonstrate understanding. For example, fifth and sixth grade students may expound in detail under



their equivalent fraction computations the following (example) sentences that expatiate their understanding of the mathematical process, “The proper fractions ( $\frac{2}{3}$  and  $\frac{6}{9}$ ) on either side of the equal sign are equivalent ( $\frac{2}{3} = \frac{6}{9}$ ) since the fraction,  $\frac{2}{3}$  is multiplied by ‘1 whole’ (i.e.,  $1 = \frac{3}{3}$ ) to compute  $\frac{6}{9}$ . Thus, the identity multiplication property is valid for fractions ( $\frac{2}{3} \times 1 = \frac{6}{9}$ ) as it is for whole numbers (e.g.,  $7 \times 1 = 7$ ).” Similarly, in science, journals can be used to describe entire processes for complicated phenomenon like photosynthesis, tectonic plates, the rock cycle or planetary recognition and their associated elliptical orbits. As expected, the teacher would need to guide this practice with their students. Generally speaking, journaling is comprised of three main learning modalities: visual, auditory, and reading/writing.

### 3. A Class Video or Digitally Streamed Content –

Visuals shown as either downloaded from the internet or a professional level quality video can be invaluable learning opportunities for students to grasp the overall concepts of their unit studies in science, literacy and social studies. However, if the student is allowed to sit **passively** in their chairs and watch the video, it is highly likely that most students will remember very little of that content 24 hours later. Students should take notes during the video, and the teacher can administer a quick formative assessment on key points. It is also advisable for intermediate elementary and middle school students that teachers allow them to use their notes during the ad hoc assessment. Finally, in order to strengthen student learning, a teacher can stress the main aspects of the streamed content in subsequent core lessons or during daily spaced repetition sessions and eventually ensure student mastery of the content. In this instructional case, the learning modes employed are visual, auditory and writing.



### 4. Formative Loop – Math Fact and Processing Numeracy Skills –

Computer-based math fact programs are frequently used so students can ingrain their four-math fact (i.e., addition, subtraction, multiplication, and division) operations. Unfortunately, these digital programs are effective for a relatively small number of students. *Digital numeracy programming's lack of efficacy is due to the fact that student learning is primarily visual.* Furthermore, typing and entering the answer (e.g., 48 for  $6 \times 8$ ) via the keyboard does not trigger the same cognitive functionality as writing the content physically by hand. However, **Formative Loop** is a hybrid computer program that requires a daily 5-minute **written assessment for both** math facts and processing skills. Student mastery success on prior and current grade level processing and math fact skills is effective with over 90 percent of enrolled students when the daily numeracy program is implemented with priority, press and consistency. The physical writing of the daily 5-minute assessment is the student learning difference when comparing the general lack of mastery for many children on computer-based (visual) math fact programming.

### 5. The 800 Non-Negotiable Word Challenge

is actually an elementary school spelling resource; however, it does much more than that. It encompasses the most common words in the English language that slowly evolved over the last 1,500 years into non-phonetical word spellings versus their oral pronunciations (e.g., house, debt, island, while, doubt, about, high, night, while, etc.). Accordingly, the student is taught to **‘think the word, say the word, and write the word’** each time they write a high frequency word five (5) times during the resource’s practice pages. Hence, students cognitively and actively engage their brain in three different areas due to employing the three different learning modalities. Note: This free downloadable literacy resource has been used in Title 1 middle schools as teachers are desperately attempting to rectify their students poor spelling skills of basic English words.

6. **Reading** – The physical act of writing employed simultaneously while reading a short passage (or a book, as an adult) includes brief notetaking in the margins of the paper alongside the text or text features. Students jot down a sentence or two and/or several brief notes alongside the text – basically, the main point of that paragraph or adjacent paragraphs. The writing process not only aids in better understanding the author’s purpose, but it augments active engagement and the practice of rephrasing a paragraph into its main or core idea in a couple words or a singular sentence. It is highly recommended that teachers consider this added learning modality as a technique due to its overall effectiveness in literacy comprehension. The visual aspect of reading is supplemented by both ‘thinking – metacognition’ and ‘writing’ learning modalities.

7. **Bedtime memorization of ‘important’ information.** There is a means for students beginning in the intermediate grade levels to combine writing and thinking (metacognitively) for nighttime learning. Beginning at the age of 9 years old, approximately 10 minutes before going to bed, a student should **WRITE** on a piece of paper some bits of information that they are required or need to memorize. For example, math facts (i.e.,  $8 \times 6 = 48$ ,  $11 - 5 = 6$ , or  $49 \div 7 = 7$ ), weekly spelling/vocabulary words, historical dates, geographical data, etc., etc. *(It is paramount that the information to be memorized is limited – only two to four math facts or spelling words that the child is having difficulty memorizing.)* Then, while lying in bed, before drifting off to sleep, look at the piece of paper with the small bits of information. Then, repeat that information over and over – but only by **thinking about it and saying it softly out loud**. By the time the student wakes up the next morning, the brain has committed that information to long-term memory. Cognitively, the brain is apparently ‘processing’ that data while we sleep, and when we awake in the morning, it is committed to long-term memory. **Note:** I have used this memorization technique throughout my life from the time I was an elementary student into my university and professional work years. The method is efficient and effective for memorizing state capitols, ingraining critical elements of my most difficult university engineering and math classes, or mental mapping of the salient points in an upcoming professional presentation. A positive byproduct of this type of mental process is that I frequently fall to sleep more quickly than usual, and the more I have practiced this memorization technique, I have become more cognitively efficient and effective at using it.



In the above seven (7) examples, the physical act of writing is a key cognitive learning tool that assists in storing useful information in long-term memory and associated recall.

### **The Decline of Physical Writing in Public Schools and its Potential for Resurgence**

In public schools over the last decade, physically writing via a pencil (or pen) has dramatically decreased beginning in the elementary schools. **Why?** Digital devices! Educators at all professional levels, from the classroom to a state’s education agency, all too frequently ‘*throw the baby out with the bathwater*’ on any type of system without realizing its ramifications on student learning. Of course, a decreased emphasis on physical writing began with the abandonment of instruction and student practice for learning cursive writing and penmanship during the 1990’s, as personal computers rapidly replaced typewriters. By the early 2,000’s, state education agencies were openly de-emphasizing cursive writing and penmanship in their state curriculum standards requirements. Consequently, students began learning to print individual letters in a personalized free-form artistic style as well as holding a pencil or a pen in any random fashion. If a grandparent observed



their grandchild holding a pencil or a pen today when they are writing on a piece of paper, they would be befuddled as to why a teacher would allow such bad (penmanship) habits to form in the first place. But there is a reason behind poor penmanship.

For the last couple decades in elementary school, children have been permitted to hold their pencil in any random manner, as opposed to the standard index-thumb controlled grip while resting on their middle finger. **Why?** The teachers did not require students to maintain pencil control to practice their print letters or cursive writing because quite frankly, they were not required to practice those skills with state standards' accountability. Again, when personal computers began to dominate all aspects of human activity, educators took their cues from the state standards that good penmanship and cursive writing

practice – apparently – were no longer needed. As a result, a sizeable number of intermediate elementary students are challenged to legibly write a series of complete sentences using a pencil or pen as well as sign their own name cursively. Thus, they are not as comfortable writing by hand as are their parents and grandparents. Expectedly, the lack of writing proficiency also presses an inability to read cursive writing with a high degree of proficiency.

However, it is not only a lack of development of fine motor skills; the lack of primary elementary grade training and daily practice has deeper ramifications. According to Word Genius (Hallard Press) in an article posted in February of 2023, *“Cursive writing is making a comeback. Research has shown that handwriting notes activates multiple brain regions associated with optimal memory, much more than note-taking with digital devices. Taking notes by hand or writing a to-do list on paper will preserve that memory a lot long longer than typing into a laptop or phone. As of February 2022, fourteen (14) states passed legislation requiring cursive writing to be taught in schools with legislation pending elsewhere.*

Regardless of learning to write with good penmanship and cursive writing, the physical act of writing – in general – is an effective modality in which students learn and cognitively retain information. If we do **NOT** teach basic penmanship and cursive writing skills, we do not stress the importance of writing to our primary-aged students. It is paramount to note that writing begins with learning how to **correctly** hold a pencil and practicing good penmanship skills. As indicated in the seven (7) examples above, intermediate elementary and middle school teachers possess a need to use the physical act of writing as a learning modality in their core daily lessons. If the most basic penmanship and cursive writing skills are NOT taught in the primary grades, then students will not be as comfortable physically and legibly writing in later grade levels.



### Final Thoughts

A well-designed core lesson should utilize a combination of the four (4) learning modalities to teach and engage students effectively. When students learn only visually or auditorily, a teacher can never be certain if their students have mastered the lesson's content. Usually, it requires some type of written formative or summative assessment to verify student mastery. This assessment could be a quick kinesthetic movement as well; however, seasoned educators often veer toward a more permanent written response when they desire a record for comprehension learning checks. As stated above, writing proficiency and its associated use is



directly aided by good fundamental penmanship skills. Students should begin to learn the correct means to hold a pencil/pen as well as heighten their penmanship skills when they are in the primary grades – including cursive writing. Then, they are sufficiently prepared for writing activities when they reach the intermediate elementary grades.

Of course, digital learning and resources are not going away – actually, the opposite is true. Computers and digital devices present many wonderful opportunities for visual learning and an immediate access to a wide range of information at one’s fingertips. Yet, digital learning applications rely heavily on visual and auditory modalities. Additionally, typing on an iPad, smart phone or computer does **NOT** stimulate the same cognitive mechanics as does the physical act of writing. Digital devices and programs are not a panacea to solve the learning disparities in the classroom. Digital learning will not save children in the classroom. Teachers using sound pedagogical instruction/lesson design with appropriate student accountability and threshold repetitions for each student will press much higher academic performance.

It is my hope that educators are not lulled into complacency by the fact that much of standardized testing at the end of each school year has transitioned to a digital medium. The major reason for that change is because that medium provides an easy, inexpensive means for checking and compiling student results as well as statistical analysis. Furthermore, this transition to computer-based testing does not imply that digital learning should be the primary force of learning in elementary school classrooms during the school year. In the author’s opinion, this current practice of relying primarily on digital learning in the classroom is a fatal pedagogical mistake in far too many of our public schools. Many students will be and are frequently left academically behind when teachers rely predominately on digital learning devices. If this current pedagogical trend continues, it is reasonable to expect that the disparity in student outcomes between socioeconomic elementary school will persist.



Teachers **must** consider student engagement and threshold repetition practice in their daily lesson design and planning. Active engagement affords teachers of all experience levels with the confidence that students are involved in the daily learning, and writing is a powerful learning acquisitional tool. Teachers should also employ more physical writing activities in their daily lessons – journals, active note taking, math fact and processing skills, spelling, etc. Writing is an important learning style modality on the means that humans cognitively acquire knowledge as well as store and recall information at any age. In short, writing is a tried-and-true medium that can and should not be overlooked by educators in the digital era.