

Chapter Seven

Visual Instructional Plans: The Visual Modality

Problems with Corrective Feedback

Increasing Efficiency

Our objective is to make independent learners out of helpless handraisers so that you can be free to work the crowd during Guided Practice. As long as you are preoccupied with tutoring the helpless handraisers instead of working the crowd, goofing off will be rampant, helplessness will be reinforced, and the rest of the class will receive no supervision at all.

To accomplish our objective we must *wean* helpless handraisers from their chronic pattern of helplessness, dependency, and passivity. Step *one* is to reduce the *duration* of helping interactions.

Praise, Prompt, and Leave – or more commonly, just Prompt and Leave – reduces the duration of the helping interaction through sheer efficiency. We answer the question, “What do I do next?” simply and clearly and then put the student to work before he or she has time to forget the prompt. We solve problems of cognitive overload, forgetting, and the reinforcement of learned helplessness in one fell swoop. Beautiful!

Close, But No Cigar

Years of training teachers to do Praise, Prompt, and Leave in a variety of subject areas has given me a clear picture of how long it takes to help a student who is stuck when you are efficient. The average is 30

Preview

- An efficient verbal prompt takes the teacher about 30 seconds.
- Unfortunately, it only takes the class 10 seconds to get noisy.
- We must reduce the duration of corrective feedback to less than 10 seconds, and we must reduce the verbosity that creates cognitive overload.
- If words are getting us into trouble, eliminate the yackety yak. After all, a picture is worth a thousand words.
- In order to wean the helpless handraisers, we must replace verbal prompts with visual prompts to create clarity while reducing the duration of the interaction.
- A Visual Instructional Plan (VIP) is a lesson plan in visual form. It is a string of visual prompts that provides a clear set of plans for correct performance.

seconds. The range is roughly 15-45 seconds, and if the student asks a question, you are over a minute before you know it. On average, therefore, we decreased the duration of corrective feedback from four-and-a-half minutes to half-a-minute – *an 89% reduction!*

Unfortunately, this is a classic example of, “Close, but no cigar.” Praise, Prompt, and Leave takes 30 seconds, but you lose the class in *ten seconds!* Praise, Prompt, and Leave is too long by a factor of *three*.

But this is just the first of many problems with Praise, Prompt, and Leave that forced the further development of our instructional methodology. Verbosity proved to be a far more intransigent problem than I had imagined.

Backsliding into Verbosity

During training to do Praise, Prompt, and Leave, I would spend the better part of a day doing “prompting exercises.” The trainees would practice efficient prompting using math, science, language arts, and social studies examples. Teachers would struggle with their verbosity, but eventually almost everyone would learn to prompt efficiently in one or two sentences.

Unfortunately, when I had the opportunity to visit their classrooms a month or two later, I found that half of them had slipped back into habits of yackety, yackety, yack. Why? We had worked so hard!

Habit Strength

One problem was *habit strength*. In a nutshell, a behavior that you have repeated 10,000 times has more habit strength than a behavior you have repeated 100 times. It coincides perfectly with the characterization of an old habit as having a “deep groove.”

During training, we were attempting to replace habits of speech that were three or four *decades* old with habits

that were three or four *hours* old. On the basis of habit strength, which patterns of speech do you think would win out over the following months?

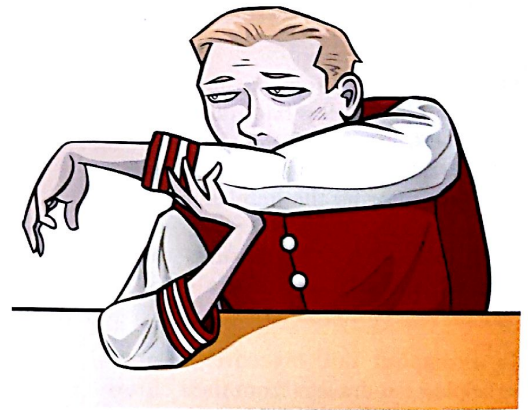
Yet, while habit strength posed a formidable problem, the biggest problem resided not in the teachers but, rather, in the students. The helpless handraisers were constantly seducing the teachers into staying longer in order to tutor.

Wallowing Weaners

Every classroom in the country has a handful of “weaners” – the helpless handraisers that we are trying to *wean* from habitual patterns of learned helplessness. These students have a routine that “works” for them. They do nothing until you finally get to them, and then they watch as you do their assignment.

They are not about to give up this pampered lifestyle without a *fight* – certainly not in order to become *independent learners*. That’s work!

Consequently, when you try to wean them, *weaners fight back*. I have seen weaners use some very primitive tactics in order to keep the teacher from leaving – like grabbing them and shouting, “Wait!”



Helpless handraisers have a routine that “works” for them.

But, most of the time, weaners use more sophisticated verbal skills.

When weaners fight back, their primary tactic is *wallowing*. The refrain of the wallowing weaner is, "Yeah, but."

- "Yeah, but I don't understand what to do on this next part."
- "Yeah, but that's not what you said at the board."
- "Yeah, but you didn't explain that."
- "Yeah, but I still don't understand."
- "Yeah, but I'm going to play helpless as long as I can to keep you here forever."

Worried Teachers Hover

The final reason that trainees tended to backslide into verbosity was that, being caring teachers, they *worried* about the students who chronically struggled. To a nurturing teacher who worries in this fashion, a simple verbal prompt seems so cold and brief.

Watch these teachers as they attempt to leave a wallowing weaner, and you will be treated to a bit of visual comedy. They give the prompt, and then they look at the student hesitantly. They straighten up and look back at the student a second time.

Their body language is saying, "How can I be *sure* that you don't need more help. I just *don't know*. After all, I didn't really spend much time with you."

This hovering is an open invitation to wallowing. No weaner worth his or her salt will miss such a blatant cue. And once they murmur, "Yeah, but," it seems so cold-hearted to continue walking away. But, then, *co-dependency is a two-way street*.

Beyond the Verbal Modality

Wean to What?

After watching my trainees backslide, I concluded that I was blocked – at least temporarily. Then one day, as I watched a teacher tutoring a helpless handraiser on a math assignment, I saw the teacher point to the board and say, "...then do step four, just like my example on the board."

When I looked at the board, I had an epiphany! What I saw is pictured below. It was the teacher's *example on the board*. I recognized it instantly. It was just like the example my fifth grade teacher put on the board years before.

Since I grew up with examples on the board like this, I never gave them a second thought. It was your standard visual aide – no big deal.

But, when the teacher said, "...then do step four, just like my example on the board," I looked at the board as the student would. That's when I had my epiphany.

I could not see step four. It was buried. The individual steps of the calculation were nowhere to be seen.

$$\begin{array}{r} 82 \text{ r } 3 \\ 6 \overline{) 495} \\ \underline{- 48} \\ 15 \\ \underline{- 12} \\ 3 \end{array}$$

A summary graphic hides the individual steps of a lesson.

The refrain of
the wallowing
weaner is,
'Yeah, but ...'

Opening the Door to Wallowing

Imagine that you are a helpless handraiser trying to monopolize the teacher's body. The typical "example on the board" would give you an excellent excuse to raise your hand and say, "I don't understand what to do here."

As I watch teachers constructing their examples on the board in the traditional fashion, I am reminded of a standard scene from old-time western movies. The outlaws are being pursued across the rocky badlands by the posse. One of the outlaws dismounts and breaks off a piece of sagebrush to obliterate the tracks of their horses over the rocks so the posse can't follow.

With our summary graphics, we also *obliterate the trail* so the students cannot follow. All they have left is their memory of your verbal presentation. This gives every helpless handraiser a green light for wallowing.

A New Perspective on Graphics

Summary Graphics

I will call the traditional "example on the board" a *summary graphic* because it summarizes the steps of the calculation. Teachers usually build their summary graphic progressively as they go through the steps of the calculation.

Rather than being a good visual aid, it *omits* most of the information that might come from the visual modality. The students are left with a single picture of how the problem should look when it is completed. But, there is no path to follow.

For strong students this is no big deal, but for weaker students it is disastrous. Some will seek help while others will fail in silence.

Building a Model Airplane

To get a new perspective on the visual modality of instruction, let's step out of the classroom for a moment. Imagine that you are shopping for a birthday present for a ten-year-old. As you pass a hobby shop, you notice model airplanes in the window. You decide to buy one.

On the box you see a picture of that model built by a professional. It is *perfect*. There are no flaws – no bent decals or glue dripping down the side. Your *example on the board* is like the picture on the box.

But, when you give the model to a kid, he or she quickly opens the box to see what's inside. On top of all of the parts is a *set of plans* for putting the airplane together. Kids need a set of plans because they have never made one of these things before.

A Set of Plans

The objective of a *set of plans* is to be utterly clear to someone who has never done this task before. What format does it follow?

- One step at a time
- A picture for every step
- Minimal reliance on words

Compare	÷	X	—	Compare	Bring Down
$\begin{array}{r} 6 \overline{)495} \\ \underline{6} \\ 9 \\ \underline{6} \\ 3 \end{array}$	$\begin{array}{r} 8 \\ 6 \overline{)495} \\ \underline{6} \\ 9 \\ \underline{6} \\ 3 \end{array}$	$\begin{array}{r} 8 \\ 6 \overline{)495} \\ \underline{48} \\ 15 \end{array}$	$\begin{array}{r} 8 \\ 6 \overline{)495} \\ \underline{-48} \\ 15 \end{array}$	$\begin{array}{r} 8 \\ 6 \overline{)495} \\ \underline{-48} \\ 15 \end{array}$	$\begin{array}{r} 8 \\ 6 \overline{)495} \\ \underline{-48} \\ 15 \end{array}$

A Visual Instructional Plan (VIP) shows each step of the lesson.

The model airplane company understands that they will never know the kid who tries to build the model airplane – age, IQ, reading ability, or mother tongue. But they know that if this model doesn't go together right the first time *without a teacher in the room*, the kid will never buy another one.

Consequently, they have been forced to answer the question, "What do I do next?" clearly and without language. They had no choice but to use *pictures*. After all, a picture is worth a thousand words. This format has worked well for generations.

A Lesson Plan Is a Set of Plans for the Student

Think of a lesson plan as a set of plans for building something. It may be a calculation, a sentence, a paragraph, an essay, or a wooden bench in shop class.

A lesson plan is for the *student* – the person who has to "put this thing together." While it may also be of use to the teacher's supervisor or to a substitute, these are secondary functions. First and foremost, it is for the *student*. If it does not help the student learn, it is for the most part a waste of time.

If the student cannot do the assignment from your set of plans, then, by default, the student is thrown back on the only other resource in the classroom. That resource is *you*. Once a needy student gets your time and attention, they will want to keep it.

Visual Instructional Plans (VIPs)

A String of Visual Prompts

I will refer to a lesson plan with clear stepwise graphics as a Visual Instructional Plan or "VIP." It is little more than a *string of visual prompts*. It provides the student with a permanent record of your instruction that can be referred to at will.

Sticking with our long division example for the time being, imagine providing a separate picture for each step. The VIP might look like the illustration to the left.

Next, just to get the feel of it, let's look at an example from algebra (below). Remember multiplying two binomials?

Multiplication of Two Binomials

$x + 3$ (one binomial)

$x + 3$ and $x - 9$ (two binomials)

$(x + 3)(x - 9)$ (place binomials in parentheses)

$(x + 3)(x - 9) =$ (multiply two binomials using FOIL)

$(x + 3)(x - 9) = x^2$ F (first)

$(x + 3)(x - 9) = x^2 - 9x$ O (outside)

$(x + 3)(x - 9) = x^2 - 9x + 3x$ I (inside)

$(x + 3)(x - 9) = x^2 - 9x + 3x - 27$ L (last)

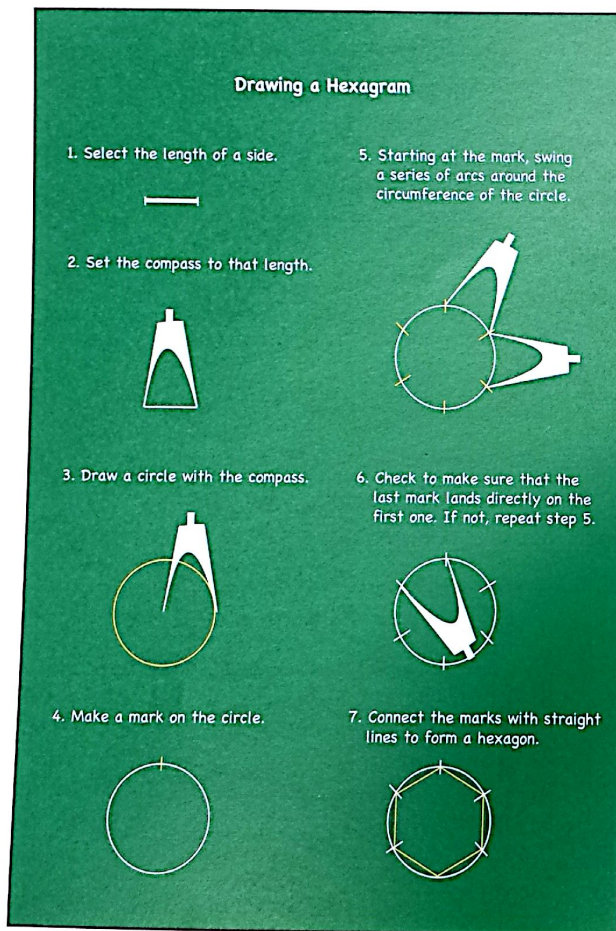
Simplify your answer. (Add like terms.)

$(x + 3)(x - 9) = x^2 - 9x + 3x - 27$

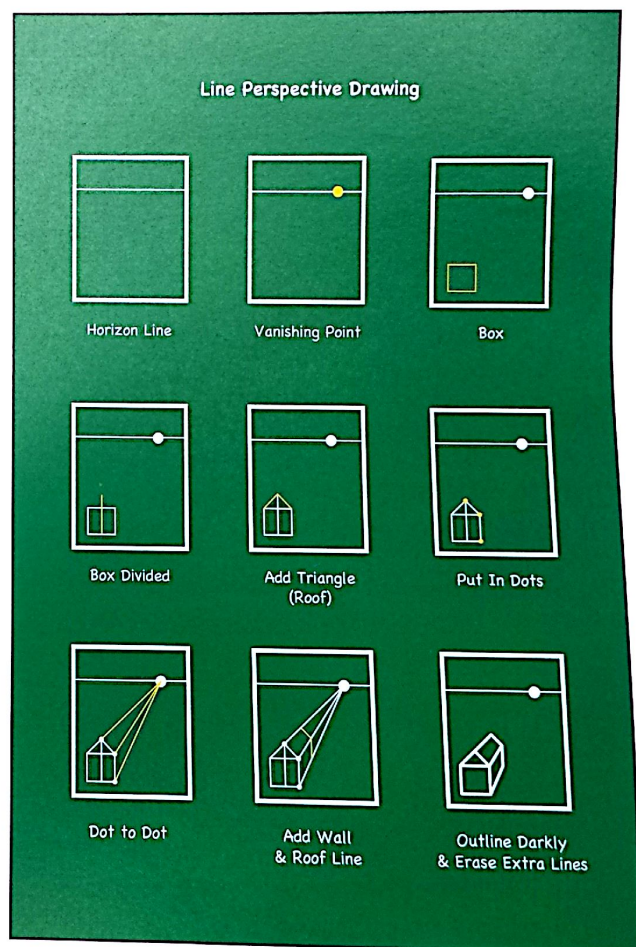
Final Answer $x^2 - 6x - 27$

Geometry Class

Let's stick with math a bit longer because it is so clearly stepwise and graphic. Below is an example from geometry class – Using a Compass to Draw a Hexagon. As with any good prompt, simplicity produces clarity.

*Art Class*

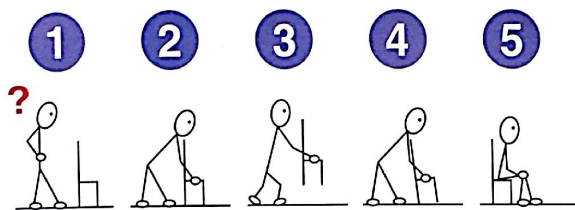
Below is an example of a VIP from art class – Line Perspective Drawing. Of course, a VIP is not a substitute for teaching. You would involve students in the step by step activity of learning as you always have.



Beware! Old habits are hard to break. We grew up watching teachers make summary graphics. To help in making a separate picture for each step, tell yourself to *step to the right*. Each time you take a step, you will be faced with a blank section of chalkboard. This will prompt you to draw a new picture.

VIPs for the Primary Grades

A common question asked by primary teachers is, "What do you do if the students cannot read?" The easy answer is, "Omit words." Pictured below is a lesson plan for a classroom procedure – carrying a chair properly.



For students who cannot read, omit words.

To appreciate the use of this lesson plan, imagine that you have taught the students how to carry a chair properly, complete with modeling and practice. A few days later you see a student dragging a chair across the room. Before that student can whack another kid in the shins with a chair leg, you intervene.

Since you expect such mistakes in the days following training, you post the VIP shown above where it can easily be seen. Rather than having a verbal interaction with the student, you might simply stop the child, point to the graphic and wait. Usually, nothing would need to be said.

VIPs Accelerate Learning

VIPs dramatically accelerate learning. The VIP of long division was developed during a workshop in twenty minutes by a fifth grade teacher. When I talked to him the following year, he said,

"Last year I spent the entire first semester on long division, and by December, I still had a half-dozen kids who couldn't do it. This year, with good graphics, we all mastered single-digit division in one week and double-digit the following week."

By accelerating learning, VIPs greatly reduce your level of frustration. It is hard to feel a sense of accomplishment when one handraiser after another says, "I don't get it."

Many teachers post the VIPs for each subject on the bulletin board so students can refer to them if they have forgotten something from yesterday or the day before. You can even give a student extra credit for making you a neat copy for posting.

Some teachers have been able to use these VIPs to simplify working with students who have been absent. Make two or three of your best students your "catch-up committee," and have them tutor the student who has been absent using the VIP.

VIPs Aid Weaning

Reducing the Duration of a Prompt

When the teacher is helping a student during Guided Practice, the noise level becomes loud in ten seconds. Therefore, the teacher must give students all of the help they need *clearly* and *thoroughly* in less than ten seconds.

When faced with this necessity, you will realize that there is only one way out. Your explanation must be *prepackaged*.

How can you prepackage an explanation. Once again, when faced with necessity, you will realize that there is only one way out. You must *substitute pictures for words*.

With adequate graphics, the teacher can point out a critical feature of one of the steps and be gone. It is not uncommon for a prompt to sound like this:

“Look at Step Four up on the board. That is what you do right here. Do the rest of the problems through step four. I’ll be back in a minute, and we’ll go to step five.”

After teachers develop an economy of speech during training, the next skill is to make prompts open-ended. Give students a job that keeps them busy until you get back.

A Halfway House for Weaning

You cannot wean a helpless handraiser by simply removing the help. If you try to go “cold turkey” with chronic help-seekers, they will increase the intensity of their help seeking.

Rather, you must wean the student from your body to a *body substitute*. A VIP is a body substitute. It answers the question, “What do I do next?” in your absence. Only when we combined efficient prompting with a VIP were we able to “turn the corner” on wallowing.

Shaping Independence

With a VIP you can begin to put help-seeking on extinction. Rather than operating a simple extinction program, you will operate a program known as DRO – differential reinforcement of other behavior. You systematically

replace the behavior you don’t want with the behavior you do want. This “other behavior” is independent work.

A VIP with an efficient verbal prompt allows you to reduce social reinforcement for help-seeking to a few seconds. Then you can give more generous attention after the student has followed the prompt. Students quickly learn that they can still “get your body,” but they will get very little if they *don’t* try and much more if they *do* try.

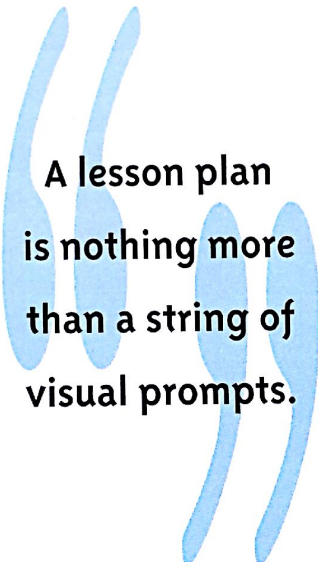
If you return to a student who is still doing nothing after you have given a prompt and worked the crowd, reduce social reinforcement to zero. Simply point to the VIP and give the student “a look” as you keep moving.

Reducing Performance Anxiety

While help-seeking is habitual with some students, the help-seeking itself has an emotional trigger. That trigger is performance anxiety. As soon as the student feels a twinge, their hand shoots up in order to get help.

VIPs help to reduce chronic help-seeking by reducing performance anxiety. At any time the student can look up and see exactly what to do next. This has a calming and reassuring effect. It helps the student focus on the task instead of initiating their task avoidance routine.

Once students relax and learn that they can still bask in your attention when they produce some work, weaning speeds up. Eventually, students wean *themselves* from the VIP. They glance at it as long as they need to, and when they no longer need to, they quit glancing up.



**A lesson plan
is nothing more
than a string of
visual prompts.**

Types of VIPs

Pictures

The VIPs presented so far are nothing more than a list of steps with a picture for each step. Pictures are most useful for tasks which involve computation or physical performance. I saw a good one recently at a public swimming pool – three pictures for mouth-to-mouth resuscitation that left little doubt as to what to do.

But not all lessons lend themselves to pictures. By this point in a workshop the social studies teachers are usually feeling antsy, and someone raises a hand to say,

“I teach history and government. We deal with *concepts*. I don’t see how VIPs apply to us. How do you draw a picture of a concept?”

Outlines

Actually, you have been drawing pictures of concepts since elementary school. An outline is a picture of a concept.

An outline provides a string of visual prompts for the development of an idea. It tells the student what to do next just like a picture would. It provides a conceptual framework to guide them, for example, as they write an essay.

A common practice in the humanities, unfortunately, is to simply *assign a topic* for a paper. A topic by itself provides the absolute minimum of structure. However, replacing it with an outline causes many teachers to balk and say, “You’ve just written the paper for them.”

This is a natural perception which I have shared. Before passing judgement, however, ask yourself, “Is this paper a contest to see who is the smartest, or is it an attempt to teach as much as possible to as many as possible?”

I had to ask myself that question at the beginning of my teaching career at the University of Rochester. I assigned a paper to my graduate seminar. I was shocked at the papers I received. Whole areas were missing from almost every paper. What they wrote was well done, but not one of them was complete. Why?

It was difficult to attribute the poor outcomes to laziness or stupidity since I was dealing with doctoral students at one of the top universities in the country. Stripped of easy rationalizations, I had to examine *my* contribution in order to explain the high degree of variability in quality.

As I ruminated, it occurred to me that I had provided no structure whatsoever for their work. Instead, I had simply assigned a topic. I was blindly following a pattern modeled by almost every teacher I had as I was growing up.

In order to change, I had to confront my own feelings. If I told them *exactly* what I wanted, was I “giving them the answer?”

This topic became the subject of our seminar, and it became clear how silly it was for me to expect graduate students to have a complete cognitive map of a topic that I had been studying for fifteen years. Of course they left out whole areas.

Consequently, I developed an outline for the paper that I wanted to receive. Once I started, I got on a roll. I provided the headings, the subheadings, the major questions to be addressed, and my favorites references for each section of the paper.

The papers I received were beautiful. The students worked very hard. Rather than “doing the work for them,” I had simply specified the work that I wanted them to do.

When approaching an outline for a paper, be thorough. Be complete. Don’t hold back. You’re not doing their

work for them. You're giving them a road map. As the old saying goes, "If you don't know where you're going, you're not too likely to get there."

Mind Maps

Mind maps combine the information of an outline with the clarity of a picture in an easy-to-read diagram. A mind map is literally any graphic that shows someone how to organize an idea, solve a problem, or perform a series of operations. The graphic to the right is a mind map of mind mapping.

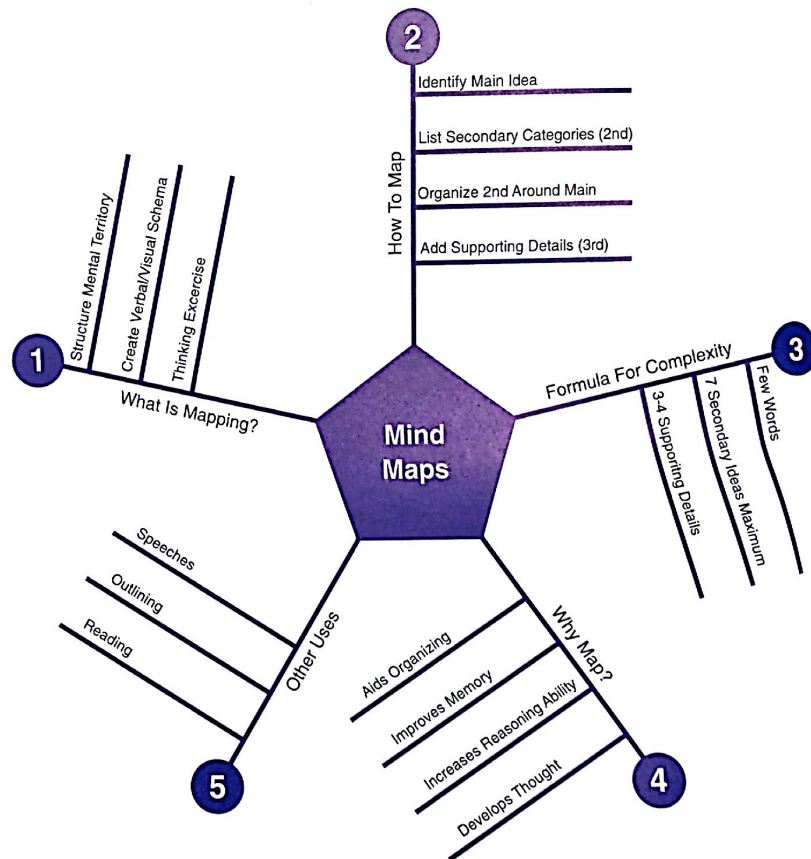
Most descriptions of mind mapping focus on clarifying the relationship between main ideas and secondary ideas. But in mind mapping, necessity is the mother of invention. Sometimes mind maps illustrate a linear sequence with no secondary ideas at all, something that could just as easily have been presented in the form of a list.

The illustration on the following page shows a variety of schema for mind maps. You are probably familiar with all of them. No doubt you have made some of your own that were far more complex.

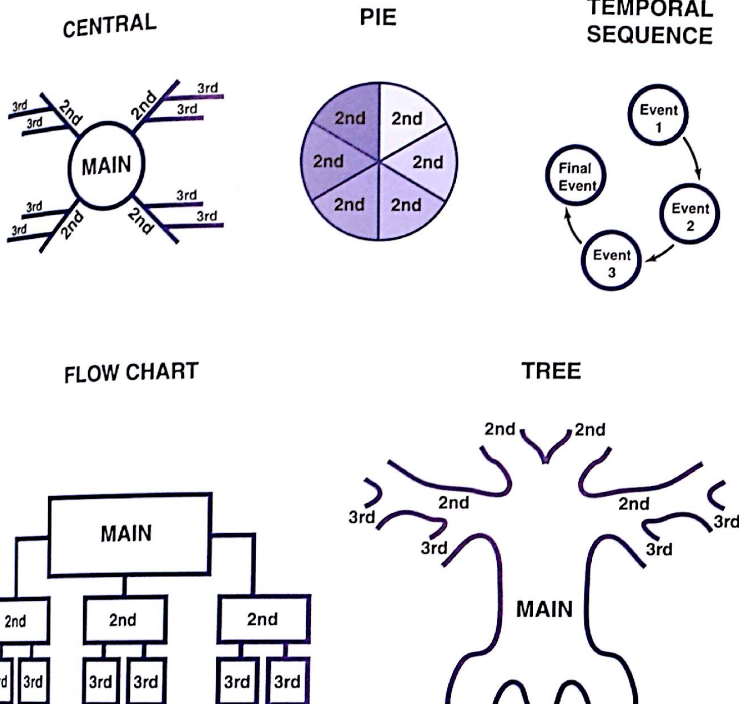
Nevertheless, social studies teachers often struggle to build mind maps that are appropriate for representing concepts. Fortunately several excellent resources are available including Mapping Inner Space: Learning and Teaching Visual Mapping (Nancy Marquies), Mind Mapping (Joyce Wycoff), The Mind Map Book (Tony and Barry Buzan), and Use Both Sides of the Brain (Tony Buzan).

VIPs vs. Simple Visual Aids

It is important to discriminate VIPs from other common types of visual aids. Over the years teachers have developed many devices for representing performance in graphic form. Many of them are far too cryptic to serve as VIPs.



A mind map shows someone how to organize an idea, solve a problem, or perform a series of operations.



In mind mapping, necessity is the mother of invention.

Our algebra VIP provides an example. High school math teachers will say, "I use F-O-I-L to help the students remember the sequence of multiplying two binomials."

F-O-I-L is a convenient memory device that would be of help when reviewing for the mid-term. But, it omits most of the information needed for initial acquisition.

Long division provides another example. Teachers have traditionally summarized the computation with the four symbols pictured below. It would be more accurate to think of this graphic as a *vestige* of a VIP rather than the VIP itself.

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Task Analysis and Performance

Task analysis is the term commonly used in education for dividing a task into the steps of performance. I have learned that logic alone is not a reliable guide to performing a task analysis. You can logically divide any task into any number of steps.

To be useful, the steps into which you divide the task must align with what you want the students to *do*. They must correspond to *meaningful acts*.

In order to see the task with the fresh eyes of new learning, actually manipulate the equipment, do the calculation, or walk yourself through performance. From the student's vantage point, keep asking yourself, "What do I *do* next?"