Visual Tools For Literacy

Transcript of Speaker

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Module One: I. Why Visual Tools for Literacy Now? Research and Results

The Need for Literacy Tools – Part I

It’s great being with you today. One thing that I want to say is that it’s a delight being with a room full of educators who are grappling with the issues of today’s world and today’s students and all that they have up against them. What we’re really going to be looking at today is how visual tools facilitate literacy, and we’re talking from kindergarten all the way up through college level.

What we’re really going to be looking at are different types of visual tools, some that you already know about such as webbing and graphing organizers and concept mapping, but also then looking at how these tools can be pulled together in a whole school environment so they’re not just isolated tools but really richly developed.

If you look on the cover of your handout, you’ll see what some of our students are actually faced with, and that is the idea of your neither here nor there. Students have a lot of information. They have to deal with a lot of different subject areas, along with the information glut that is before them. When they click onto the computer, into the worldwide web how is it that they work with information not just reading comprehension, both in the sense of fiction and nonfiction, but how do they deal with different types of information and media.
For example, if you just pick up any paper, just like “USA Today” is all over the country, it’s not just text that students are heaving to deal with. They’re having to deal with pictures, a lot of graphic information, a lot of different types of information. What we’re going to be working with today is not just how to facilitate student thinking for literacy development, but also for the larger picture of information.

What I’d like to start with is actual use of one of the visual tools, and it’s called the circle map, and here’s what I’d like you to do. I’d like you to take a moment and on the blank page that you have before you just write the term literacy in a circle. Then what I’d like you to do is draw a circle around this. This is actually called a circle map, and it is for developing students’ thinking for identifying a topic they’re going to look at and then the context information.

What I’d like you to think about for a minute and jot down within this circle, what is literacy; what do you think of when you come with the term literacy. What is that about? For example, you might—typically, we would just say reading or writing, and you might even say information. What I’d like you to do is just take a moment and generate some ideas about what is literacy, because that’s what we’re really going to look at is how visual tools can facilitate literacy development. So, if you would, please take a moment.

All right. Let’s get some of those ideas. What is literacy? What do you think of when you hear the term literacy? To be able to function in society. What does that make you think of? Function in society. Are we in the 1800s? So, it sounds like also communication; being able to communicate well. We could also put down listening and
also speaking; speaking, right? So, literacy is not just being able to take text and comprehend it, it’s not just to be able to develop text by writing out things, it’s being able to listen, to really draw from different people, to communicate and also, if you think about our age, the so-called computer age or information age, it’s the capacity to be able to pull a lot of information, text and graphic information, from a lot of different places.

The Need for Literacy Tools – Part II

So, one of the things that I’d like you to do now, because this is a very simple map; it seems so simple to just generate ideas; and many of us have used such maps for brainstorming information. And this is a map for defining an idea, but also generating ideas around it. It’s the context information. Here’s what I’d like you to do now. I’d like you to draw a frame, a box, around this circle, and this is the frame of reference. It helps us to think about how the influences of our society impact our definition of literacy.

For example, we now have computers. Fifty years ago, a hundred years ago, we didn’t have computers. The technology has a tremendous impact on how we are thinking about literacy. So, we have technology, we have constructivism, we now think about, in education, that students aren’t just a black box, that they don’t just regurgitate information, but they are constructing knowledge.

There’s also a lot of brain research that is influencing our definition of literacy and, as somebody just said, the ability to communicate in collaborative groups. That really relates to what we just said about speaking. Literacy is the capacity to bring a lot
of information from a lot of different sources together and be able to work with that information, not only individually, but in pairs and also in cooperative learning groups.

By the way, when students get into a cooperative learning group and they’re sharing ideas, they don’t often have the tools for really networking their thinking and putting them together and sharing them. Oftentimes, it’s conversation but, in fact, what we’re going to find today is the visual tools across a lot of different types facilitate cooperative learning. It helps them to really focus their attention and also develop their ideas in an organized way.

If you turn to your next page, on page 2, you’ll see a quote by Alvin Tofler. He says, “The illiterate of the future are not those who cannot read or write, but those who cannot learn, unlearn and relearn.” In today’s world, a student right now in kindergarten going through 12, 13 years of education and higher education and then into the college and workplace, they may be going through 8, 9, 10 different jobs. It isn’t just a matter of becoming literate in a certain sort of focused area, but it’s being able to adapt, to be able to work with different kinds of people internationally as we expand our reach communication wise, but also to be able to really be attuned so their minds are flexible – there’s a mental fluency that they’re able to actually work and adapt to the changing world.

This wasn’t the case 200 years ago when basically we had children who were brought up on a farm or maybe close to a place where industry was going on, and they were being mentored in a certain trade. Now, we have students that are fluid and going across a lot of different jobs and a lot of different needs.
As we talk about visual tools, and if we work with these around what is literacy in
developing a literate society, we really have to think about broader terms than just
reading and writing. We’re also going to be looking at numeracy. What is it to use
visual tools to develop literate, mathematical thinkers, and in this day and age that data
analysis and use of data, whether it’s in a newspaper or in the headlines is going to be key
for our students.

**Brain Research: The Visual Brain – Part I**

If you turn to the next page, page 3, you’ll see where we are going to go with this
course. We’re basically going to look at different types of visual tools. What you have
before you is a tree map, and it basically came out of the research I did looking at
different types of visual tools. Many of you are familiar with brainstorming webs; those
have been around for many, many years. We’ll certainly take a look at those. Sometimes
they’re called semantic maps, clusters, webs; there’s a whole lot of different terms for
these what I consider to be called brainstorming webs.

A second type are now becoming quite familiar with everybody, and those are
called graphic organizers. I call them task-specific organizers, and we’ll get into why I
call them that; but it’s basically we have now all these different organizers for specific
tasks such as story board, such as timelines, a lot of different graphics that are used for
specific tasks, whether they’re for reading comprehension or writing. So, we’ll take a
look at some of those different types of graphic organizers.
There’s a third type that people are less familiar with, and I call them thinking process maps. These are basically developing students’ thinking. It isn’t just being able to graphically represent something in order to comprehend a reading selection, but it’s the capacity to conceptualize. It’s how is it that I’m working with the information, and how is it that the visual tool supports my conceptual development. That, to me, is a very intriguing development in the last 20 years or so, far exceeding what we can do with brainstorming webs and graphic organizers.

As a synthesis model—and this is where we’re going to go later in our course together—we’re going to look at a design that I developed called Thinking Maps®, and this is an integration, really a synthesis of what we have learned from webs and graphic organizers and concept maps. It’s basically a graphic language that whole schools are using to facilitate student thinking, not just for the moment but over time.

As you can see, there’s a frame around this tree map of different types of visual tools, and it’s just what we were discussing; and that is how is it that visual tools really reflect where we are in our education system. We now understand that students need to be actively engaged, to construct knowledge. They have to be able to use technology, and we see a lot of graphics all over technology. We’ll actually talk about and look at some different software programs such as Thinking Maps® software for facilitating visual learning.

Students need to do collaborative work together. How do these different types of tools work to facilitate that kind of thinking.
Then we’ll also take a look at brain research. What are the implications for what we now know about how the brain patterns information? Very simply, when you think about it in classrooms, most of what we do is verbal or written. Is that the way the brain works? In a linear fashion? Just a little bit. Mostly, we have a dynamic networking mind and brain. There’s actually some dissidence and cognitive dissidence between how we present information, which is a lot of verbal information or written information and that rich networking capacity of the human mind and brain. We’re going to take a look at that, which will be quite interesting. I think some of the research reveals that we’re actually imbalanced toward being strong, visual learners. We’re just not equally auditory, visual and kinesthetic; we’re actually dominantly visual learners.

**Brain Research: The Visual Brain – Part II**

That’s where we’re going. What I’d like you to do is just take a moment and turn that page over, because I do want us to think about where our schools were and the schools of tomorrow. By the way, this document comes out of work that was done in the early ’90s, the Scans Report on what is required of students in not just today but in tomorrow’s schools.

If you notice, what we identify here is that there needs to be, in schools of tomorrow, which I would suggest are today, a focus on the development of thinking skills, that assessment is integral to teaching. It isn’t just that we teach and then at some point we do some assessment; it’s in the moment assessment of student thinking.
In the learning environment, students need to be actively engaged. We’re going to look at how visual tools actively engage students. By the way, when you see students looking out the window, that tells you something. That tells you that their eyes are wanting to focus and gain something, and they’re sort of losing track. So, we’re going to look at how visual tools, different types, keep students engaged in the learning process.

Then also for cooperative problem-solving and also noticing how visual tools—and it was mentioned earlier—facilitate lifelong learning. How do the visual tools help students to think through processes, think through their relationships, think through their family life and problems; not just to see these as isolated academic skills, but skills that students can use for the rest of their lives.

Then, of course, we are shifting in classrooms toward student-centered learning; it isn’t just teacher lecture. It’s about student engagement and students taking responsibility, not only for their own learning but their own assessment. We’re going to also look at how you can look down on a map and become self-assessing. You can see your thinking, reflect on it and internally become a more active learner and thinker.

Interesting, in this document, they said as an outcome that there’s a belief that all students can improve their thinking. That’s ultimately what my work has been about; and I think what a lot of people are using these different types of visual tools are about is how is it that we can really support students, all students, in the development of their thinking processes.

That’s where we’re going – sort of big picture.
The Mind, Constructivism and Cognitive Science Research

What I’d like you to do is just take a moment and turn the page and look at this picture of a neural network. Interesting. We were just talking about the implications for brain research. Notice this expanding neural network. It has sort of a webbing quality; doesn’t it? It doesn’t look like text, particularly. What’s very interesting is what is going on in our brain constantly is these rich associations that are happening.

If I say the word apple, what do you think of? Red. Pie. Teacher – symbolically, teacher. Or the computer company. What we do in our brains and mind is that we make rich associations. Nobody just started talking in three-paragraph essays about apple; right. Your mind, immediately your brain made these very interesting connections.

What we’re doing with visual tools is drawing on the natural capacity of the human brain and mind to link information together. Fundamental. Fundamental to how students think and how we can facilitate their thinking.

This was taken from a book by Bob Sylvester on The Brain & the Implications for Brain Research for Classrooms. I just want to read what he had to say just about the eyes. “The one million fibers in the optic nerve of each eye carry a summary of the vast amount of data that the retina’s 127 million rods and cones receive.” One hundred twenty-seven million. Think about the complexity of what we have right here. “Further processing combines the segments into shapes, colors them, combines them, locates them in space, names them and contemplates their meanings. At this point, sensory processes are being transformed into thought processes.”
What Sylvester is doing is he’s saying we get all this sensory information, all of this information, and that’s the point of cognition, along with the auditory; and it’s there that we begin to, in a sense, unconsciously really make cognitive decisions. We are linking information together.

If we go to another piece of brain research, and this by Kane and Kane, if you turn the page over, there’s a lot of discussion about what it is to have brain compatible teaching. What does that really mean? You’d sort of think that all teaching is brain compatible; right? I mean, we would hope so. But when you look at the researchers and what they’re saying, here’s a very interesting quote. “The overwhelming need of learners is for meaningfulness. We do not come to understand a subject or master a skill by sticking bits of information to each other. Understanding a subject results from perceiving relationships.” And, he says, “The brain is designed as pattern detector.”

What our brains do quite naturally is they seek patterns. Where there isn’t one, we’ll make one. Consider just looking up at the stars. It looks sort of chaotic, but what do we do? We create constellations. Our brains are always seeking patterns. If you lay out some blocks for a child, a child will not just sort of sit there and throw them around, all of a sudden he starts building something to try to seek a pattern. What’s going on is a very nonlinear process that the brain is going through to seek different patterns, and that’s really a focus of our work.

Interesting, if you turn to page 7, statistics here from the research. Ninety percent, 90 percent of all of the information that comes to our brain is visual. Isn’t that an amazing statistic? Ninety percent. When teachers are talking or they’re writing on the
board, there’s a little bit of information there. But consider that most of what’s going on is visual – students are trying to take it in. But most of what we do in classrooms is auditory.

The maps, different kinds of visual tools and maps, provide a way for students to visually represent and process what teachers are saying and for teachers to present it.

Also—I like this statistic—36,000 visual images per hour may be registered by the eyes. Thirty-six thousand. That seems impossible.

I’d like to do an activity with you very quick. It won’t hurt. What I’d like you to do is close your eyes for a moment. Just close your eyes. Don’t fall asleep. Now, pick up as much information as you can from around the room with your eyes closed. Now, open your eyes and look around the room for the same amount of time. What’s the difference? Tell me, what do you think? What’s the difference?

By: Participant

Faster and sharper.

By: David Hyerle

Faster and sharper. Okay. What else?

By: Participant

More complete.

By: David Hyerle

More complete. Yeah. What did you pick up just from your ears? A little movement. Anything else?

By: Participant
The air vent.

By: David Hyerle

The air vent. Then what did you pick up with your eyes? You look at the rich array of colors, people, shapes. You look at somebody and all of the sudden you start thinking about different people, what they’re doing. There’s all these different associations that we come to.

One of the things that we’re trying to tap into with the visual tools is that strong, strong modality that we have as human beings. We actually have an imbalance with this. That’s what we’re really drawing on.

**Putting Reading First: Research and Reading and Writing Using Visual Organizers**

What I’d like you to do is now just turn the page and look at a graphic organizer. This is an organizer. It’s called a problem/solution organizer. This was developed around 1985 by Doctor Bonnie Armbruster. She was researching the implication for using visuals for student learning. What she found with fifth graders reading a social studies text is if she gave them this problem/solution organizer—and oftentimes they’re called advanced organizers—that their performance went way up after they got through the text. They had a way to think about the text structure.

This is absolutely key. Oftentimes we ask students to read a selection, and then we start asking them questions. Sometimes we might set it up with a question – This selection is about explorers. I want you to read about what happened here, and then we’ll talk about it. When you give students a graphic ahead of time, they’re able to think
about, Boy, I need to be looking for these things. They also have a tool for organizing it, and then after the reading is completed, they have a way of then bringing that information together in a very sophisticated way.

Now, it’s interesting. Bonnie Armbruster is also now one of the key authors of a federal report on reading comprehension. You may be familiar with it. It’s called “Put Reading First.” It comes straight out of the federal government. In their research, they’re basically trying to do a summary of the research in reading comprehension. In this day and age, this is powerful information; this is what people are looking at because, of course, funding is also attached to the different kinds of reading approaches that one uses.

Two things that come out in the section on reading comprehension. One—and this is really powerful—is that they say that students need to be metacognitive. Meaning, they have to be able to think about how they’re thinking as they’re reading. They can’t just sort of go through a reading selection and then all of the sudden they’re able to answer these selections. It isn’t just about fluency; that has to be developed. It isn’t just about phonics, which has to be developed. But it’s about being able to capture the structure and be able to think about the reading selection. Metacognition, that was one, that’s huge.

The second one – with the use of graphic organizers. They identify this as the key strategy for student construction of knowledge when they get into a reading selection. Here’s what the report says. “Graphic organizers can help readers focus on concepts and how they are related to other concepts. They help students read to learn from informational text in the content areas such as science, social studies textbooks and trade
books. Used with informational texts, graphic organizers can help students see how concepts fit common text structures.” Okay. So if they have that text structure ahead of time, they get into the reading selection, and they’re able to pull that out. “Graphic organizers are also used with narrative texts or stories such as story maps.”

Here are the three outcomes that they said. First, graphic organizers help students focus on text structure as they read – and we’re going to look at that later. There isn’t just one structure. There are things like comparatives, cause and effect reasoning, structure part/whole, category structure, a whole lot of different text structures. Second, they provide students with tools that they can use to examine and visually represent relationships in text; and, third—this gets back to our discussion about literacy—they help students write well-organized summaries of texts.

If you think about it, here we have this document coming from the federal government saying what is reading comprehension about. It’s about thinking about how you’re thinking as you’re reading. And then providing some very concrete tools, so as you’re reading you’re able to organize the information, and then you’re able to go develop a piece of writing.

Literacy, in the sense of visual tools, is really the capacity to have those text structures in mind and have them in hand just as you create these visuals as we work together, and to be able to go to the full final writing product.

**Information Literacy and Technology**
With that, I want you to just take a moment, and if you would, turn over. You have those documents in hand, but I just want to close up this section by having you look at this document. A lot of text information there; right? Here’s a depiction—and it’s a symbolic depiction—of the worldwide web. Guess what? This is what our students are up against.

Not up against, because, guess what? Most students flourish in the web environment. They go, Ah, this is really great. I can go there, I can go there. I can click there, I can click there. I click right into . . . And then you’re going, Just a minute. Are you making any sense of all of this information? How are you making sense of all of this information? They can click on channels on the TV; right? They can get all those audio channels that they want, all those different movies, all those different crossovers between MTV to wild shows plus all of the websites that are evolving – every day they just pop up more and more.

We’re asking students to go online within the school environment to grab chunks of information. How are they organizing that? Or are they sitting before the screen just clicking and being mesmerized by what’s visually before them?

As we work with these visual tools, I think you’ll come to see—and “see” is a powerful metaphor—that these are tools for really helping students to make sense of information, to take it and mold it so that they can fashion more meaningful responses to the questions that we ask.