

VISUAL LEARNING WITH STUDYMAP TOOLS

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Introduction

In the process of teaching, methods for structuring and learning the information given in class are not often provided by the teacher. The visual tools presented below have been designed to accompany the students through the integration process. As a result, at the end of the classroom time the students will already have learned the key points of the lesson and will only need to reinforce and/or apply what they have learned.

I will first discuss the possibility of creating a pictorial language through the visuals tools I have developed called StudyMaps. Further I will show a few examples of how images have been used in the memorization process, from Ancient Greece until now, followed by a few testimonies on how a specific StudyMap has been used in 2008 for teaching in Africa.

Developing a Pictorial Language

Basic Observations about the Use of Pictures

Pictures are able to communicate a lot of information in a small amount of time. TV programs, movies, internet websites and advertisers have quickly grasped the potential of images and have put it to heavy use. Yet, the use of pictures in Western education remains mostly marginal, if not simply dismissed from "serious" education. In order to show the potential of pictures for teaching, this paper will first discuss the possibility of using pictures as one uses words, and then how to develop a visual grammar.

Pictures and Words

In the development of writing, the evolution has often been from meaningful visual representations, like Egyptian hieroglyphs, to more abstract representations that led to written alphabets.¹

A picture can be a symbol representing an object, person or idea. This is similar to how words function in a language, since a word is associated to an object or idea. Through grammatical associations, words have been combined in meaningful units like sentences - something that seems not possible with pictures.

Toward a "Visual Grammar"

Languages have the ability to relate words together through grammatical associations. A picture is like an isolated word which is not integrated in a sentence. The question is then: Is it possible to find a way to combine pictures as we combine words together in a meaningful whole?

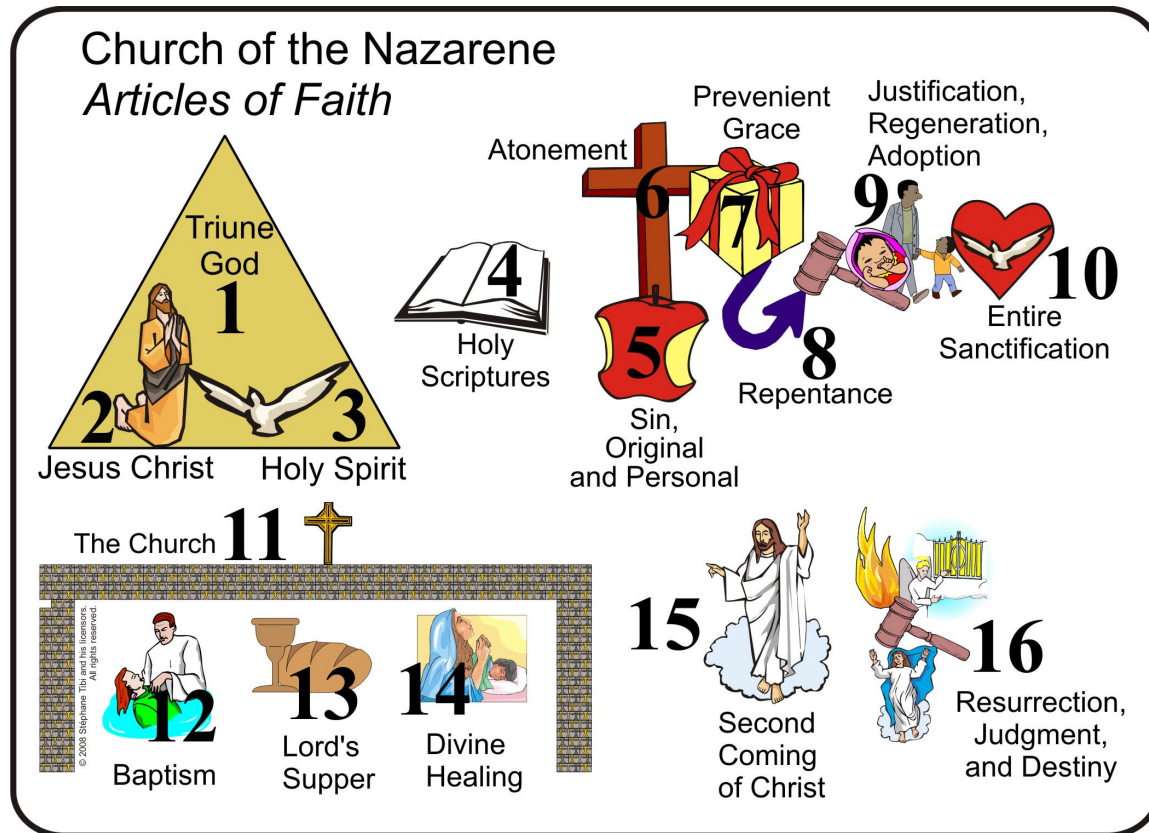
When we put pictures together on a single page, we have already created a bigger picture that has different parts, but some basic rules must be developed in order to give a meaning to visual relationships.

¹ A noteworthy exception to this move toward alphabets is the Chinese writing with logograms.

An Example of Visual Grammar: Relative Positioning with StudyMaps

We will now use a specific StudyMap, on the Articles of Faith of the Church of the Nazarene, in order to give an application of the concepts related to a "visual grammar."

StudyMap One - Articles of Faith



In combining the images of this StudyMap, a basic "visual grammar" is used, namely a grammar of visual associations and distinctions that I call *relative positioning*, because the relative position of the images can communicate meaning.

For example, in StudyMap One, the first three articles of faith are graphically tied together in order to manifest that they express the same reality of the Christian faith: God, One in three persons. The separation between the pictures of 3 and 4 reflects the fact that articles 1 to 3 are linked to one another in a way very different from 3 and 4. Also, the image of article 4 is not graphically connected to 5-10 (Original Sin - Entire Sanctification), since articles 5 to 10 focus on humanity while article 4 (the Holy Scriptures) shows where we can read about the relationship between God (1-3) and humanity (5-10).

In order to be meaningful, these visual associations need to be combined with explanations; for example, those found in the guide of the StudyMap on the Articles of Faith². Pictures cannot replace explanations, but can offer a support that will allow a better memorization of the meaning of what is taught. For the StudyMap used here, it is important to explain the choice of pictures³ and then the

² Both the StudyMap of the Articles of Faith and the associated guide available online (accessed 13 Jan. 2009): www.studymaps.org.

theological relationships in association with the spatial relationships. We could say that this process is a process of "loading with meaning," both at the picture level and at the relationship level.

This visual grammar is aimed at strengthening the memory. Then, because this memory will have a stronger structure, it will allow students to visualize associations between the different elements they have learned with more ease.

When we learn or teach with "rote memory," we have the risk of separating memorization from understanding. Understanding should be the cement that strengthens and gives its use to the memory. When it is removed from the memorization process it significantly weakens the memory. This means that StudyMaps not only structure and present in a visual form the data to learn, but also the relationships between the elements learned. Another way to say this is that StudyMaps move from a linear memory (rote memory) toward a visual, bi-dimensional memory.

Learning with Pictures, From Ancient Greece to Modern Mind Maps

Different methods of visual learning have been developed through centuries, and I will briefly mention a few, as I then stress the common points and differences with StudyMaps.

Memorization in Ancient Greece - Referential positioning

Ancient Greeks developed a method to learn with pictures. For example, in order to memorize a speech, they would associate in their mind a part of the speech with a part of a house. For instance, the first point of the speech would be associated with the door, the second point with the first chair inside the house, etc. When pronouncing the speech, the person would "walk in memory" through this house and tell in order the different parts of this speech associated with the different parts of the house.⁴

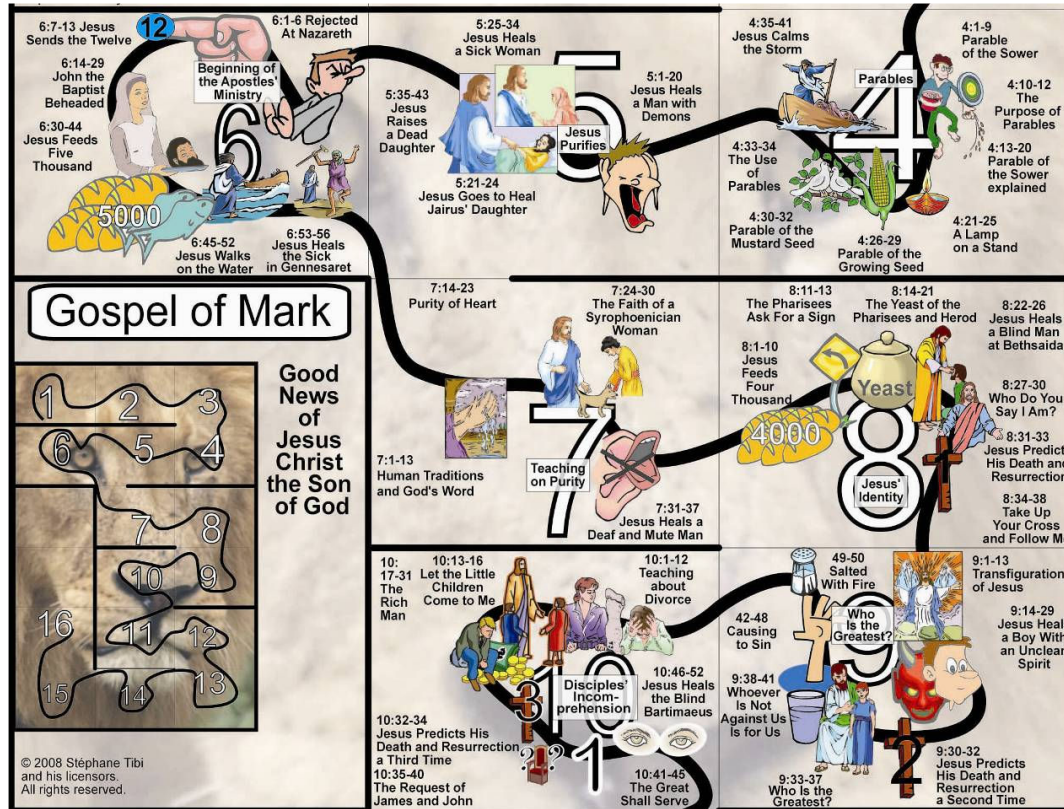
This is a linear association, each part of the house being related to the next one. The image is clearly subservient to the linear speech in such a case.

In StudyMaps, this type of associations is sometimes used and named *referential positioning*. For instance, in the part of StudyMap Two on the Gospel of Mark (see below), the picture of a lion in the background is used as the Greeks used the houses or various buildings to remember their speeches. Like in the referential positioning used by the Greeks, each part of the lion's head is associated with a chapter number of the Gospel of Mark (the left eye will be associated with the chapter 6, the right eye with 4, etc), thus helping to retrieve the number and title of this chapter. (The titles of the chapters are visible on the chapter numbers themselves: 4-Parables, 5-Jesus purifies, ...) The picture of the lion is used twice: first in a reduced format on the left side to show more clearly how chapters are associated to the parts of the head, and then enlarged as the background image for the entire StudyMap.

³ Depending on the cultural context of the learner, some pictures will need more explanations than others.

⁴ Frances A. Yates, *The Art of Memory* (New York: Penguin Books, 1969), pp. 27-49.

StudyMap Two – Gospel of Mark



Visual Teaching in the European Middle Ages

In the Middle Ages most people could not read, therefore pictures were often used as a support for teaching. For instance, in many cathedrals, tainted-glass windows and/or paintings describing biblical scenes were used to help teach illiterate people.

Mind Maps in the End of the 20th Century

In Wikipedia, we find the following definition for "mind map:" *A mind map is a diagram used to represent words, ideas, tasks, or other items linked to and arranged radially around a central key word or idea. It is used to generate, visualize, structure, and classify ideas, and as an aid in study, organization, problem solving, decision making, and writing*⁵.

Mind maps are an efficient analytical tool to structure a subject, but I find them of limited help in the process of study and memorization. That is why I combined the analytical structure found in mind maps with the principles of relative positioning and referential positioning, as found in what I developed and named StudyMaps.

StudyMaps

Choice of the name "StudyMaps"

Study: it is a tool for study and learning.

Map: the position of the different elements is chosen in order to facilitate the learning process.

⁵ Tony Buzan is the inventor of mind maps. See: Buzan, Tony and Barry, *The Mind Map Book*, 1996.

Definition of StudyMap

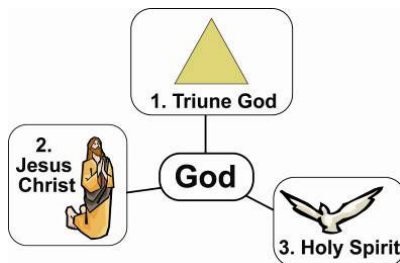
A *StudyMap* is a visual tool designed for studying and learning. It exploits the referential and relative position of the different images used to strengthen the memory. Most of the time, it will contain both graphics and texts, although it could contain only graphics or only text.

Comparison between StudyMaps and Mind Maps

If StudyMaps have common points with mind maps, there are also differences. Like mind maps, StudyMaps are tools associating different elements together, whether these elements are pictures or texts. Both mind maps and StudyMaps try to move away from a linear presentation of information.

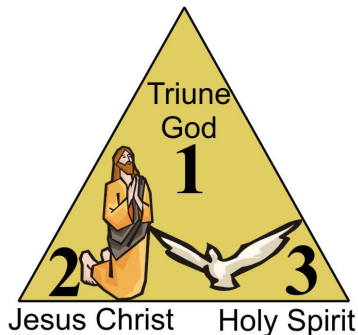
While mind maps and StudyMaps can offer a hierarchical organization, with branches and sub-branches, StudyMaps also present an interaction between the graphic elements of a same level to help structure the memory. Mind maps are like a tree with branches, while StudyMaps are more like a structured network of relationships.

Let us illustrate this point: For describing the three first articles of faith mentioned above, a mind map would look like this:



As you see, there is a center (here: God), and then three branches. There are no graphical connections between the different elements at a same level.

The StudyMap for the same content looks like the following:



As you see, there is no separate center, it is implicit and will be mentioned only during the teaching. You also see that the three images are connected visually. We could say that there is here a networking of the different elements. On the contrary, a linear graphic would allow you to relate 1 and 2, and then 2 and 3, but not to connect 1 and 3 directly together without going through 2.

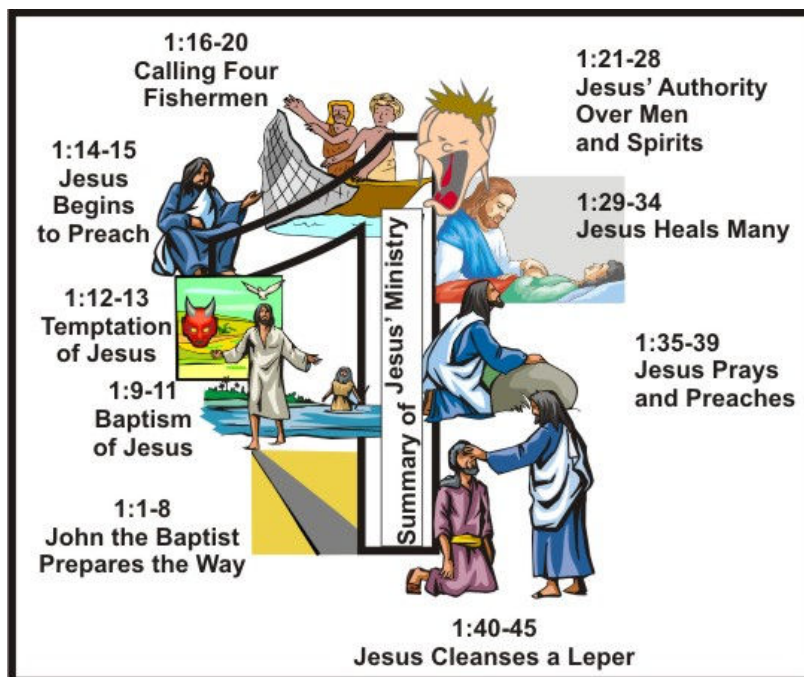
StudyMaps and Bi-Dimensional Networking of the Information

In StudyMaps, the emphasis is on networking the information. This is based on the belief that human memory is made of bi-dimensional networks of neurons. If we make images interact one with the other, in the learning process the brain will create a neural network structure that will match such visual structure⁶. Here, we can mention how easy it is for people to remember a face, while for a traditional computer, commuting data in a linear process, will not easily succeed in the same task.⁷

⁶ Dorothy Tse, Rosamund F Langston, Masaki Kakeyama, Ingrid Bethus, et al. "Schemas and Memory Consolidation," *Science* 316.5821 (2007): 76-82. The assertion that a bi-dimensional organization of data can be matched by neural structures is very bold indeed. My hope is that scientific experiments with MRI will probe where information is stored in the neural network when

The graphic on the Gospel of Mark at the chapter level is a good example of this "network" emphasis. See below the example of chapter 1:

Graphic Three – Chapter One Gospel of Mark



As you can see, there are visual contacts between the different pictures of pericopes, and the number 1 serves as a reference for helping to localize the pictures as you move around this number. Unlike in a mind map, this StudyMap tool uses pictures representing the stories from the first chapter of Mark's Gospel as they interact visually with the picture of the number one. We could say that a network of visual connections is created between the different images of within the global picture.

In order to retain the network structure of a StudyMap, it must be combined with a way of teaching that will help to structure the neural network in the brain. That is the reason why guides for teaching with a StudyMap have been developed.⁸ Basically, the instructor is encouraged not only to teach in a linear way from one point to the next one, but also after every group of items has been studied, to make the students review them first forward, then backward and finally out of order.

We can illustrate this point with the StudyMap of Mark, chapter 1, presented above. For the students to learn the title of the different pericopes with their image and position, the teacher is invited to follow these steps:

1. Make the students repeat the picture/title of each pericope one after the other, stressing the spatial groupings: first three pictures (vv. 1-13, *preparation for Jesus' ministry*), two top left pictures (vv. 14-20, *beginning ministry*), four pictures on the right (vv. 21-45, *key elements of Jesus' ministry* - authority to teach and cast out demons, heal, pray, purify). The teacher will then hide the picture and make them repeat again.

someone learns, and hopefully will confirm that visual relationships between individual elements do reinforce the memory and also allow a faster transition between short-term and long-term memory.

⁷ Simon Haykin, *Neural Networks: A Comprehensive Foundation* (Upper Saddle River, NJ: Prentice Hall, 1998). Since the 1980s, non-linear structures for computers have been developed under the name 'neural networks', and have shown that in some cases such a structure can be more efficient than linear analysis, for instance in the case of optical character recognition. For more information on computer neural networks.

⁸ I have developed, in 2008, guides for teaching with the StudyMaps on the Articles of Faith and on the Gospel of Mark.

2. The students will then repeat these stories backward. This step ensures that students use indeed their visual memory and do not rely only on their auditive memory.
3. The students should be asked questions, such as: what is the image and title on the top left, the four images on the right, the image and title preceding the two fishermen, etc. to challenge their recall of the information.

Concluding Testimonies

By the end of 2008, the StudyMap tool on the Articles of Faith mentioned above has already been used for discipleship in at least four continents (Africa, North America, South America, and Europe).

With my present role as Education Coordinator for the Church of the Nazarene in Equatorial Francophone Africa, I have trained pastors and lay people for almost two years. StudyMaps have enabled us to reach goals which would have been unthinkable without them. StudyMap tools are indeed a success in helping pre-literate students come to a better understanding of the Bible. This can also be said to be true with literate students.

Please find below testimonies of leaders of the Church of the Nazarene in Africa:

"An interesting and exciting way of presenting the Gospel...simplifying theology and bringing it right down to the level of the unchurched and uninformed in an appealing way which makes God's plan of salvation more easily understood."

In just two hours, an area leader on one of Africa's fields learned the Articles of Faith StudyMap with such thoroughness that he was able to teach it to 30 pastors later that day.

"Everywhere I have used the StudyMaps the response has been great. Personally, I found the StudyMaps helpful to me. StudyMaps not only helped me to know the articles of faith without having to look through my notes, but I have gone deeper to understand the Biblical and theological depth in the Articles of Faith." Filimao Chambo, Africa Region Education Coordinator for the Church of the Nazarene

Other StudyMaps are in development on subjects such as the Ten Commandments, the 66 Books of the Bible, and the Gospel of Mark.

My hope is that such tools will help many to learn with more ease and develop a better understanding and memory of various subjects. As a Christian, my prayer is that tools like StudyMaps will help many to come to know and serve our Lord and Savior Jesus Christ.