

AVICENNE WBT: DESIGN & IMPLEMENTATION STRATEGIES – II

TOPIC OUTLINE

IDI 2 – Visual Principles

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IDI2 – Visual Principles Concept Map

Objectives of Lesson

At the end of this lesson, students will be able to:

- 1. Develop a visual material**
- 2. Evaluate a visual material**
- 3. Assess visual literacy concept**
- 4. Locate extra resources for visual literacy**
- 5. Decode a visual element completely**
- 6. Encode a visual element**
- 7. Continue and finish a process of visual design**
- 8. Establish an organization among visual, verbal and appealing elements**
- 9. Transform visual literacy and visual design principles to Web Based Training**

2.1 Roles of Visuals in Learning

These are the main roles of visuals in instruction:

- They are way to make words or ideas more concrete
- They are tools to increase learners' attention
- They are using for simplifying ideas difficult to understand
- They provide redundant channel. They give alternatives to words and sayings
- They also support verbal information

Extra resources

1. Distance Learning Research Paper. Available at <http://www.soe.umd.umich.edu/maaipt/research/Arnold-Larkin.pdf.pdf>

2.2 Visual Literacy (VL)

VL is defined as a person's ability to interpret and create visual images. This topic is stemmed from researches examining the influence of the visual processing system acquisition of knowledge, skills, and attitudes.

There two major strategies in order to develop VL:

1. Input Strategies: This strategy relies on visual analysis skill practice where learners are attempting to decode or read them proficiently.
2. Output Strategies: This strategy aims to help learners for encoding or write visuals to express themselves and communicate with each others.

While watching a film is a decoding strategy, creating a film can be given as example for encoding.

Extra resources

1. The online visual literacy project. Available at <http://www.pomona.edu/Academics/courserelated/classprojects/Visual-lit/intro/intro.html>
2. International Visual Literacy Organization. Available at <http://www.ivla.org/>
3. Research Papers regarding Visual Literacy. Available at http://www.asu.edu/lib/archives/benedict/research_papers.html
4. Historical Images of Visual Literacy. Available at http://www.asu.edu/lib/archives/benedict/historical_images.html
5. Visual Literacy Exercise. Available at <http://www.csuohio.edu/history/exercise/vlehome.html>
6. 21st Century Skills. Available at <http://www.ncrel.org/engage/skills/vislit.htm>
7. Visual Literacy White Paper. Available at http://www.adobe.co.uk/education/pdf/adobe_visual_literacy_paper.pdf
8. Visual Literacy K-8. Available at <http://k-8visual.info/>

2.2.1 Decoding Strategy: Interpreting or giving a meaning to a visual

Alone visuals cannot be learned always. Therefore, some guides are required to decode them correctly. One aspects of VL is the skill of interpreting and creating meaning form the stimuli that surround learner.

There are some effects which have an impact on decoding skills. They are:

1. **Developmental Effects:** Development process of a person is an important variable for VL. Based on many development theories, people have common characteristics with respect to their ages. For instance, before twelve, children tend to interpret visuals section by section. However, in contrast to twelve children, older ones more focus on visuals' whole explanation.
2. **Cultural Effects:** Cultural background of learners is another influence on VL. Learners come from diverse cultures interpret visuals as much as same amount of diversity. For instance, a person who lives near coast have tendency to some colors, such as yellow – sun – and blue – sea. These kinds of differences directly affect understanding of visuals.
3. **Visual Preferences:** We have always private preferences in our daily life. Therefore, it is impossible to interpret visuals without these preferences. Some of us like colorful visuals, though some of us do not like. There is no exact pattern for our preferences. There may be some common characteristics. For instance, younger children prefer colorful thing mostly. For older ones, they tend to lime more complex illustrations. Here are some common sample preferences:
 - a. People prefer realistic pictures rather than abstract ones
 - b. People prefer colored visuals rather than black and white ones
 - c. People prefer photographs rather than drawings

Extra resources

1. Learning to Look. Available at <http://dizzy.library.arizona.edu/branches/ccp/education/guides/aaguide/lookguid.htm>

2.2.2 Encoding

Encoding is another strategy to develop VL. Reading is passive and writing is active way of developing reading literacy. Like reading literacy, decoding is passive and encoding is active process of developing VL. Nowadays, we have many choices for encoding activity. For instance, image software, camera, web-cams, digital cameras, and other similar technologies.

One of the expected skills in visual literacy is sequencing which includes arrangement of ideas in logical order.

As a WBT designer, we should be aware of main goals of visual design. One should ask the question “why we need a visual in required circumstances?” To give information or instruct, visual design aims to achieve at least four basic goals. These goals are in terms of improving communication between the message source (teacher, web based environments) and the receiver (learner):

- Ensure legibility
- Reduce the effort required to interpret message
- Increase the viewer's active engagement with the message
- Focus attention on the most important parts of the message.

Extra resources

1. Picturing books: A web site about picture books. Available at <http://picturingbooks.imaginarylands.org/>

2.3 Process of Visual Design

Every designer must decide about how to arrange the elements to achieve the goals of visual design. For processing visual design, the decision can be classified into three groups. It helps you to carry on your development process. They are;

1. Elements: Selecting assembling verbal and visual elements are incorporated into the display.
2. Pattern: Choosing a layout for presenting selected elements
3. Arrangement: Putting selected elements within a pattern;

and the final step is assessing your visual regarding your goal. If the product is satisfied, you can use it. Unless it is, it will be revised.

Extra resources

1. The online visual literacy project. Available at <http://www.pomona.edu/Academics/courserelated/classprojects/Visual-lit/intro/intro.html>
2. Presentation Visual Design Guide. Available at http://www.presentersuniversity.com/visuals_guide.php
3. Visual Design for the User Interface
Part 2: Graphics In the Interface. Available at <http://cal.bemidjistate.edu/webtraining/YaleManual/papers/gui2.html>
4. Visual Design Presentation. Available at <http://www.cwrl.utexas.edu/~ulrich/presentations/Visual%20Design.ppt>

2.3.1 Elements

Visuals are composed of small pieces. We called these pieces as *elements*. Of course, you have already aware of drivers and components of a multimedia product in the previous chapter (Chapter 1). Therefore, these elements should be developed, collected or selected with the consideration of them.

On the other hand, other considerations that have just added in this chapter are goals of your visuals.

Visual, verbal, and appealing tools are the most commonly used elements. Each of them has special design guidelines.

Extra resources

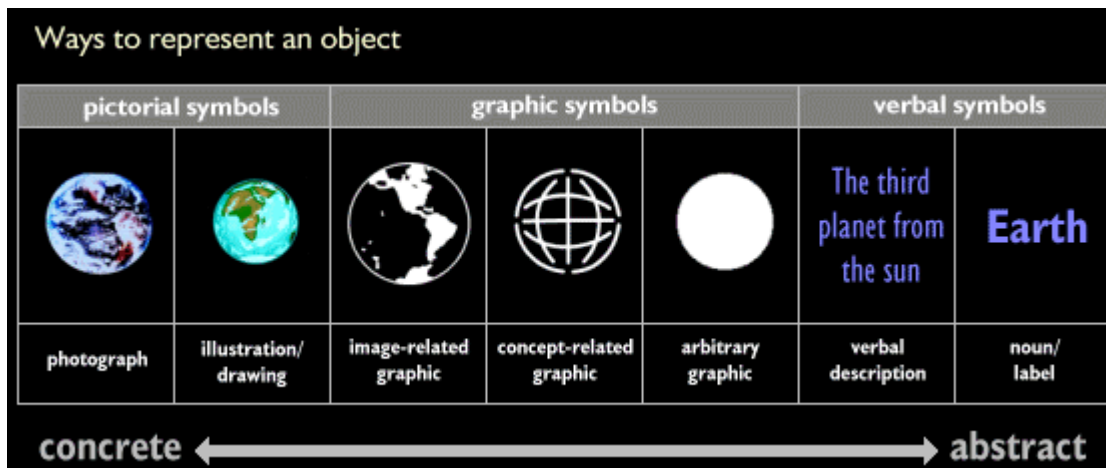
1. Educational Media Tools Available at http://www.asu.edu/lib/archives/benedict/educational_media.html
2. Arts in Children's Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>
3. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.1.1 Visual Elements

Visual Elements selection is relied on the learning task you would like to teach. Dale's Cone of Experience makes distinction among visual elements by determining three categories: realistic, analogical, and organizational.

2.3.1.1.1 Realistic Visual Elements

Realistic visual elements show real picture of the object in learning task. For instance, when you are teaching France's tourism, serving Eiffel Tower's real picture is a good way to get attention. The more realistic colors are, the more realistic pictures are. This is one of the major purposes of colors for using in instructional purposes. To take completely original photos of an object is not possible. Each photo always can take one or more parts of the real objects. You can arrange your pictures from highly realistic to highly abstract. It depends on your choices shaped from drivers. Here is a scope to show how an object can be explained in from realistic to abstract forms.



Taken from <http://www.quasar.ualberta.ca/edpy597mappin/Modules/module5.htm>

Pictorial		Graphic		Verbal	
Photo	Illustration	Concept Related Graphics	Stylized or Arbitrary Graphics	Verbal Description	Noun Label
Realistic				Abstract	

Adapted from Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (1996). *Instructional Media and Technologies for Learning*. Prentice Hall, Inc.: New Jersey, p. 75

Extra resources

1. Educational Media Tools< Available at http://www.asu.edu/lib/archives/benedict/educational_media.html
2. Arts in Children's Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>

2.3.1.1.2 Analogical Visual Elements

These visuals attempt to explain a subject by showing something else and implying a similarity, for instance, showing electricity flow by showing water flowing in series and parallel pipes. Moreover, showing white blood cells' fighting like a battle between two armies. The important point is learners' prior knowledge about the topic in analogical visuals. Therefore, learners have a chance to re-decode the topic learned in abstract format. Furthermore, analogical pictures make completely abstract concepts in concrete presentation for learners.

Extra resources

1. Educational Media Tools< Available at http://www.asu.edu/lib/archives/benedict/educational_media.html
2. Arts in Children's Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>

2.3.1.1.3 Organizational Visual Elements

Organizational elements include flowcharts, graphs, maps, schematics, and classification charts. These visual elements can demonstrate relations among the main points or concepts expressed text format. They are also good at showing organization of content. For instance, concepts map developed for each chapter in this course is one of the examples for these visual elements.

Extra resources

1. Educational Media Tools< Available at http://www.asu.edu/lib/archives/benedict/educational_media.html
2. Arts in Children's Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>

2.3.1.2 Verbal Elements

Even visuals can present content as much as possible with shapes, lines, colors, and other visual elements, verbal elements are still obligatory part of visual materials to be easily understood. Lettering issue is as critical as selection of visual elements. For effective lettering, legibility, size, spacing, and style must satisfy user at least minimum level. Another issue crucial for lettering is consistency, which is emphasized most of time in multimedia. The following points must be considered by MDs:

Extra resources:

1. Java Program Development Visual Design Guidelines. Available at <http://java.sun.com/products/jlf/ed1/dg/higg.htm>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.1 Letter Style

Main selection criteria for letter style are consistency and harmonization with other elements of the visual. For informative and instructional purposes, plain and pure lettering styles are more appropriate. Font styles are divided as serif and sans serif. Serif fonts are Times New Roman, Georgia type fonts and used for printed materials in general. However, sans serif fonts are less decorative than serif fonts, i.e. Arial, Verdana, and Helvetica type fonts. Sans serif fonts are more suitable for transparencies or projected visual materials to make legibility easier

Extra resources:

1. PC Fonts. Available at <http://www.pcfonts.com/>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.2 Number of Lettering Style

It is a general principle that in a visual, number of lettering style is limited to four. It can be ranged bold, italic, underlined, different font type or color. The more number of lettering style are, the more confusion about visual is. Type of lettering style should be used for one purpose overall the visual material. For example, if important concepts are emphasized with bold style and red color, all important concepts should be styled with the same way in all elements of the visual.

Extra resources:

1. Java Program Development Visual Design Guidelines. Available at <http://java.sun.com/products/jlf/ed1/dg/higg.htm>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.3 Capitals

Lowercase letters are better than capitals with respect to legibility. Capitals can be used for short titles, one or two word phrases, or when it is really required, such as starting a new sentence. On the other hand, the feeling of capitals is accepted shouting in general e-mail or chatting rules. Therefore, using capitals for different purposes may be hindered due to these general rules regarding web based applications.

Extra resources:

1. Java Program Development Visual Design Guidelines. Available at <http://java.sun.com/products/jlf/ed1/dg/higg.htm>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.4 Color of Lettering

It is important for contrast with background to increase legibility. In some cases, you can use colors with letters to focus a concept or anything else. However, it should not hinder legibility. Colors and legibility relation is going to be covered in this chapter later.

Extra resources:

1. Java Program Development Visual Design Guidelines. Available at <http://java.sun.com/products/jlf/ed1/dg/higg.htm>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.5 Size of Lettering

Size of lettering is a part of legibility of a visual; especially the distance between visuals and viewers is concerned. There is a common rule that for each ten m of viewer distance, lowercase size is ½ cm.

Extra resources:

1. Java Program Development Visual Design Guidelines. Available at <http://java.sun.com/products/jlf/ed1/dg/higg.htm>

2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.2.6 Spacing between Letters

This issue is judged based on experience rather than predetermined principles. Letters can be classified with respect to their shape into three categories: (a) rectangular (H, M, N, & S), (b) circular (C, G, O, & Q), and (c) irregulars shape (A, I, K, & W). If rectangular or circular letters are combined with each other at equal spacing, white space among these letters are shown as regular. However, an irregular letter(s) can prevent this regular appearance. You can cover this problem with optical spacing – what seems regular to your eyes. You can try to equalize white-spaces based on your perception rather than same amount of space size.

Example:



2.3.1.2.7 Spacing between Lines

Like horizontal spacing among letters, vertical spacing between lines is also important for legibility. Imagine that, there is no line spacing and the scene becomes as Figure 1. All letters overlap each other. It is not possible to read? You can increase spacing between lines 3 or 4 times of letter size like Figure 2. It seems each line is independent from each other. They also cannot follow easily. As a result of these experiences, spacing between lines should be slightly less than the average height of lowercase letters.

Extra resources:

1. Projected media recommendations. Available at <http://rshackelford.iweb.bsu.edu/itedu/projectedmediarecommendations.htm>
2. GNOME development visual design. Available at <http://developer.gnome.org/projects/gup/hig/1.0/layout.html>

2.3.1.3 Appealing Elements

Pure elements may not be focused attention unless they have an effect. There are some tools to add effect to your elements:

2.3.1.3.1 Surprise

Unexpected and abnormal combinations of visual elements always collect all attention on themselves. At this appeal, you should be more creative and unordinary.

2.3.1.3.2 Texture

Unless the most of visuals are two-dimensional, we can make them three-dimensional via using texture tool. Texture adds elements a tone, a mood, a feeling, and a deep. Texture is one characteristic of 3D objects. For instance, you can use clouds texture to give feeling of softness. Moreover, you can give sense of hardness by using brick texture.

Extra resources:

1. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.1.3.3 Interaction

You can increase attention of visuals by using interaction due to chance of providing feedback. Interactive visuals can complete circulation of god communication process where the receiver can send a feedback to the resource regarding whether get the correct message or not.

Extra resources

1. Educational Media Tools< Available at http://www.asu.edu/lib/archives/benedict/educational_media.html
2. Arts in Children's Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>

2.3.2 Pattern

Up to now, we have the elements selected or created based on the principles explained before in this chapter. Next consideration is how to align them for good presentation. The issue of pattern helps us to underlie "look" of our visual products. The pattern is affected by alignment of elements, shape, balance, style, color scheme, and color appeal.

Extra resources:

1. Visual Design Patters for Web. Available at http://www.classicsys.com/css06/cfm/article_2002_08.cfm
2. Visual Design Basics. Available at http://www.soi.city.ac.uk/~dcd/ig/s2viscom/la_visd/102.htm
3. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.2.1 Alignment

Alignment is related to effective positions of elements. It ensures effortless understanding and more clear presentation. In order to use alignment, designer can use edges of a visual. You can think edges as reference point and then you imagine lines parallel to these edges. Of course, shape of visual plays an important role and should be considered. If you have irregular shape elements, you can try to think them as much as possible rectangular shape.



2.3.2.2 Shape

Another technique to arrange elements is usage a shape familiar to learners. The selected shape should be the most effective showing of visuals. For instance, circle, rectangle, letters, which can be Z, L, T, and U, could be used for shaping.

In addition to rules aforementioned, the “rule of thirds” is also a good technique for shaping. In this technique:

1. We divide a visual 3 vertical and 3 horizontal pieces
2. We place elements at any of intersections of the horizontal and vertical one-third dividing lines which are the most dominant and dynamic positions, especially left upper sections.
3. The most stable and least interesting part is dead center in this shape. You can use this piece to put title or label of the visual.

Extra resource:

1. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.2.3 Balance

Balance is acquired by distributing elements equally on each side of an axis, either horizontally or vertically. It gives sense of stability. If it is repeated on both sides, the balance is symmetrical or formal. However, informal or asymmetrical balance also is used for instructional visuals. Even balance cannot be got completely, different type of elements are used for giving sense of balance. For instance, while using a big circle at the left side of visual, three small squares are used at the right side. Informal balance is used for giving more dynamic and interesting sense to users. Imbalance might not be used but it is not used because it tends to be strident.

Extra resources:

1. Principles of Digitized Web Content. Available at http://www.digital-web.com/articles/principles_of_design/
2. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.2.4 Style

This consideration is explained before in Chapter 1 – Components of Multimedia. Important point is consistency and appropriateness of style used on your visual. For instance, for an ancient history lecture, old paper appeared elements are more suitable than metallic appeared elements.

Extra resources

1. Arts in Children’s Books. Available at <http://nosferatu.cas.usf.edu/lis/lis6585/class/art.html>

2.3.2.5 Color Scheme

Harmonization of colors is important while using them. For this purpose, an analogical visual “color-wheel” is used to see harmony easily among colors.

Any two of colors are directly to opposite each other on the “color-wheel” are called complementary colors. Complementary colors often harmonize well. However, always two complementary colors cannot produce good results. It is therefore that they cannot use them together. Hence, any of two colors can be complementary colors but their equal value or

darkness hinders figure-ground contrast and legibility. If saturated complementary colors are used next to each other, eyes cannot focus on both at the same time so this produces an unpleasant vibrating effect.

Colors that lie next to each other on the color wheel are called analogous colors, i.e. blue and green, blue and blue-violet. They may also form pleasing combinations when they are used together in a display.

When a designer is working on computer screen, background color, color for images or text appearing against that background, and color for highlights can be stemmed from color scheme. In the following table can be used by designers.

On the other hand, these color scheme and principles work for normal color vision people. However, there are also color-blinded people in the society. Most color-blinded people confuse red color with green color and see mainly shades of blue and yellow. Using red lettering on green background makes their perception difficult. To alleviate this problem, dark red lettering on light green background should be used. In other words, we can arrange darkness of colors.

These principles with colors are not absolute rules. There could be many factors influencing whether colors will work well together or not.

Extra Resources

1. Real picture of Color Wheel. Available at http://www.asu.edu/lib/archives/benedict/educational_media.html#
2. Newton's Theory of Color Vision. Available at <http://www.coe.uh.edu/courses/cuin7317/students/color/color.html>
3. RGB Color. Available at http://www.coe.uh.edu/courses/cuin7317/students/color/rgb_color.html
4. RGB to Hexadecimal Colors for the Web. Available at http://www.coe.uh.edu/courses/cuin7317/students/color/web_safe.html
5. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.2.6 Color Appeal

Colors like blue, green, and violet are called as “cool” colors, whereas red and orange are known as “warm” colors. This classification is made up by a number of scientific studies. Along preparation of an instructional visual material either on-line or concrete, designer must concern which sorts of feeling they are seeking. If their expectation is an active, dynamic, warm feeling, warm colors best suits. On the contrary, contemplative, thoughtful feelings can be reflected by cool colors better. Saturated red and orange are felt a kind of approaching, though cool colors tend to recede. Moreover, daily experiences of colors are other impact on learners, such as red is sign of “stop” in urban areas. Along this purpose, using cool colors as background sounds reasonable idea.

Age shows important impact on liking and disliking a color. Children tend to prefer warm, intense colors. On the other hand, adults choose cool colors, unlike children.

Another important factor influencing preferences on colors is cultural background. Each color has special meaning in each culture. These cultural aspects play an important role on person's

preferences. For instance, for Western societies, black is color of mourning, whereas in Japan or China white is color of mourning.

Extra resources

1. RGB Color. Available at http://www.coe.uh.edu/courses/cuin7317/students/color/rgb_color.html
2. RGB to Hexadecimal Colors for the Web. Available http://www.coe.uh.edu/courses/cuin7317/students/color/web_safe.html
3. Visual Design Principles. Available at <http://www.fhwa.dot.gov/environment/visql/visql03.htm>

2.3.3 Arrangement

2.3.3.1 Proximity

Ensuing establishment of pattern, you will want to arrange the items within pattern. Viewer can assume that the items are close to each other related and those that are far apart are unrelated. The principle of proximity by bringing together related items and moving unrelated elements apart is a kind of technique for this process.

2.3.3.2 Directionals

Viewers look visuals by focusing one part to another more. Normally, pattern of elements lead viewer's eye movement but if you want viewers to read the visual in an order or focus some elements, directionals can be used to direct their attention. Arrows, bold type fonts, and bullets are frequently used tools for direction. Colored elements can be beneficial for directionals. For instance, using warm colored an arrow on cool background color seems more, attractive. Moreover, using some colors repeatedly fosters sense of relationship. As usual, more extreme colors ensure more attraction on attention.

2.3.3.3 Figure – Ground Contrast

Good elements, especially wording included, should show good contrast to background color. Simple rule of figure-ground contrast is that dark figures show up on light grounds and light figures show up best on dark grounds.

As far as letters are concerned as figures, some figure-ground contrasts enhance legibility. For instance, black on yellow is the most legible combination. Obviously, a combination of dark figures on a dark background will be even less legible than the combinations show.

Extra resources:

3. Projected media recommendations. Available at <http://rshackelford.iweb.bsu.edu/itedu/projectedmediarecommendations.htm>

2.3.3.4 Consistency

If you are developing more than one visual which are part of an instructional material, arrangement of elements should be consistent overall material. For WBT situation, you are dealing with too many computer screen designs so consistency should be met along all screens. We try to reduce learners' understanding of screens. Hence, they can just focus on content rather than repeated elements. Without consistency, learners have to spend additional mental effort to understand what visual include and send as message. Consistency can be

acquired by putting some elements in similar locations, using the same text treatment for headlines, using the same color scheme throughout the series of display.

Assessment Questions of the Lecture

- 1. How colors are used for instructional purposes?**
- 2. Which ones of the visual elements are the most important? Please support your answer.**
- 3. Compare visual literacy to reading literacy? What is importance of visual literacy in this era? Is there any new literacy requires for modern ages?**
- 4. Which one of the multimedia components are associated with visual literacy? Please explain why.**

IDI2 – Visual Principles Concept Map

