

FUNDAMENTAL OF MULTIMEDIA COLOR

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COLOR

- In this chapter, Student will be able

- To understand the color features
- To select color that suitable for their project

- References

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Color Terminology

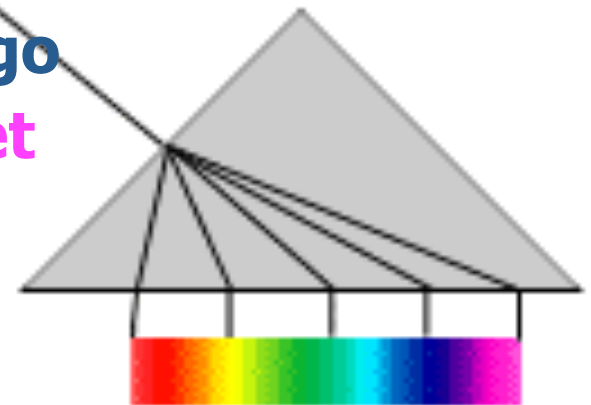
- There are several other terms used to describe color, including
 - Hue
 - Saturation
 - Value



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Hue

- Definition – a distinct color of the color *gamut* (range of a color model)
 - Defined by a particular wavelength
 - This is what most of us refer to when we say “color”
- ROY G. BIV =
 - **Red**
 - **Orange**
 - **Yellow**
 - **Green**
 - **Blue**
 - **Indigo**
 - **Violet**



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Saturation

- Definition:
 - “the amount of white light (or gray paint) mixed with the hue”
 - how MUCH color; the dominance of the hue
- High Saturated colors include little gray or white light
 - These are bright and vibrant
- Low Saturated colors appear grayish in color
 - These include pastels and “muddier” colors

High saturation



Low saturation



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Webpage Example

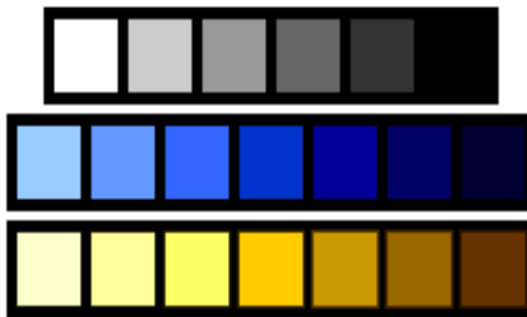
- The two screen shots primarily differ based on their saturation...
 - How has the appeal changed?
 - Is one of the slides more “generally appealing” than the others?



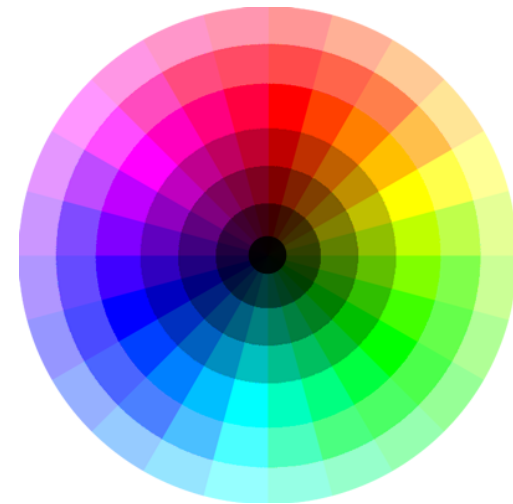
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Value

- Definition:
 - “the intensity of light present”
 - how light or dark the color is
- Also referred to as “brightness” or “intensity”
- Range from “tints” (light values) to “shades” (dark values)
- Often accomplished by mixing the color with various amounts of white or black



tints



shades



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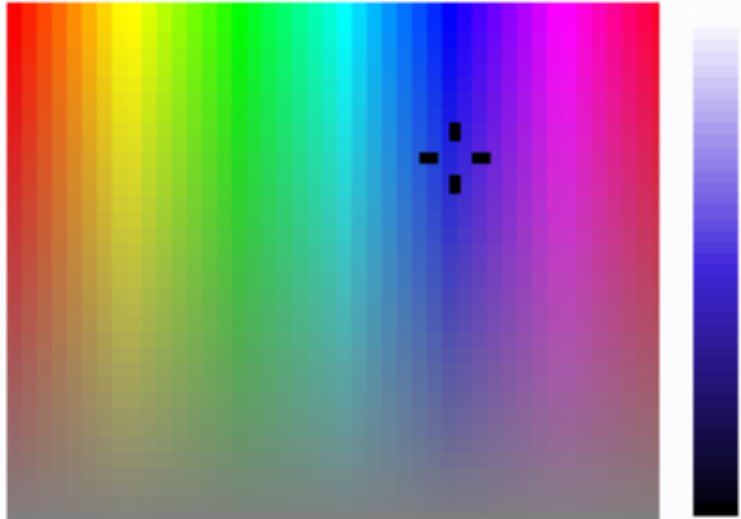
Color Model: HSV/HSL

- **HSV** specifies a value from 0 to 255 for
 - **Hue**
 - **Saturation**
 - **Value**
- **HSL** (Hue, Saturation, and Lightness/ Luminance) is a similar model, but “L” expands from white to black (rather than HSV’s black to hue), therefore providing a “double cone”
- **PowerPoint example**

←----- hue ----->

Universiti
Malaysia
G

Colors:



↑----- sat -----↓

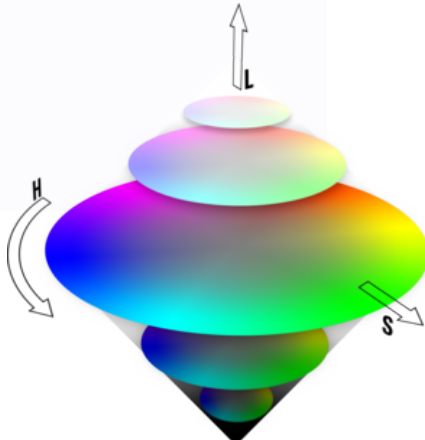
↑----- lum -----↓

Color model: HSL

Hue: 176

Sat: 179

Lum: 128



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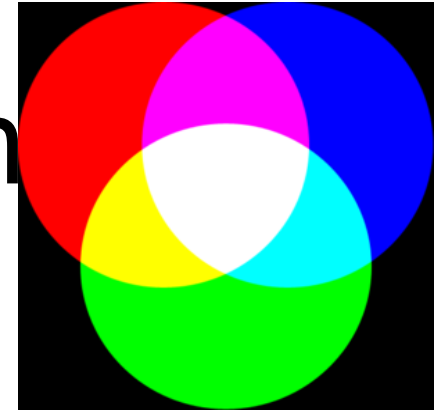
Color Wheels

- Help to arrange colors and determine appropriate combinations of color
- Three types
 - artist's wheel (paint mixing)
 - subtractive color wheel
 - additive color wheel



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Additive Color Wheel



- Models how *projected* color combines
- Black = no light (i.e., no color)
- White = all light (i.e., all color)
- Primary colors =

– **RED**

– **GREEN**

– **BLUE**

From which we get **RGB**

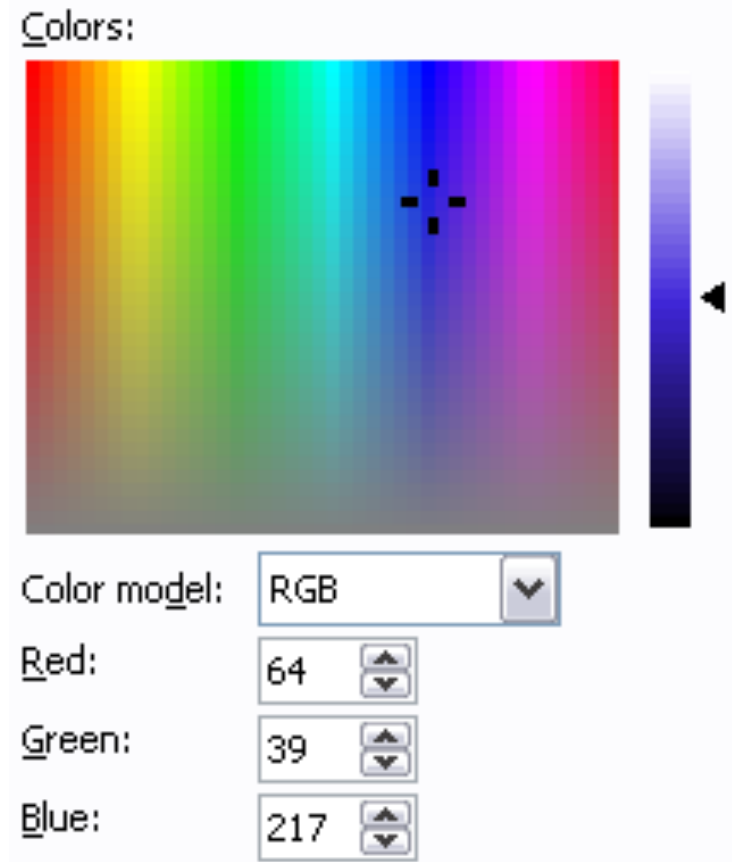
- Used in computer monitors, TV sets, and stage lighting (LCD lights)



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Color Model: RGB

- RGB stands for the primary additive colors
 - **RED**
 - **GREEN**
 - **BLUE**
- Has become a standard and is often used in languages and programs (i.e., HTML, Flash)
- Each value given an integer range from 0 to 255
- Can also be expressed as a hexadecimal value



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Subtractive Color Wheel

- Models how *painted* color combines (since it is now on the paper and *reflecting* the light)
- White = no color (all reflected)
- Black = all color (none reflected)
- Traditional (artist's wheel) primary colors =
 - **RED**
 - **YELLOW**
 - **BLUE**



OR...



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Subtractive Color Wheel

- Printers (computer) use the following primary colors =

- **CYAN**
- **MAGENTA**
- **YELLOW**

From which we get **CMYK**
(more detail later)

- Subtractive color works through light absorption (what we see is the color not absorbed)

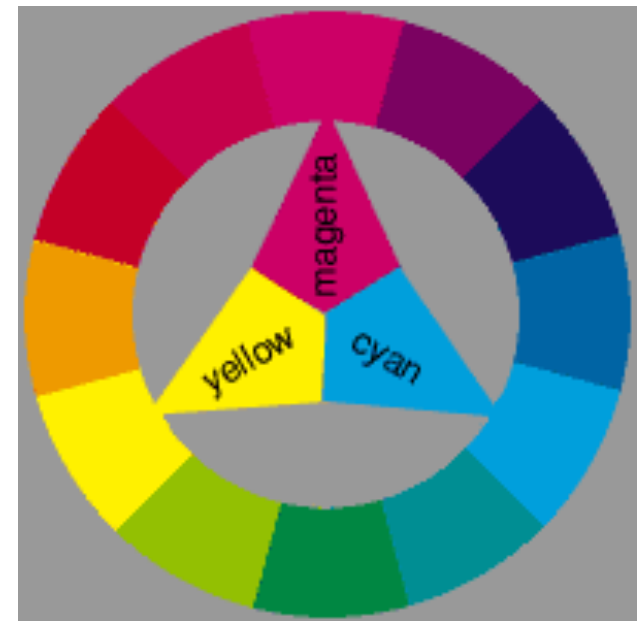
- **Magenta + Cyan = Blue**
- **Cyan + Yellow = Green**
- **Yellow + Magenta = Red**



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Color Model: CMYK

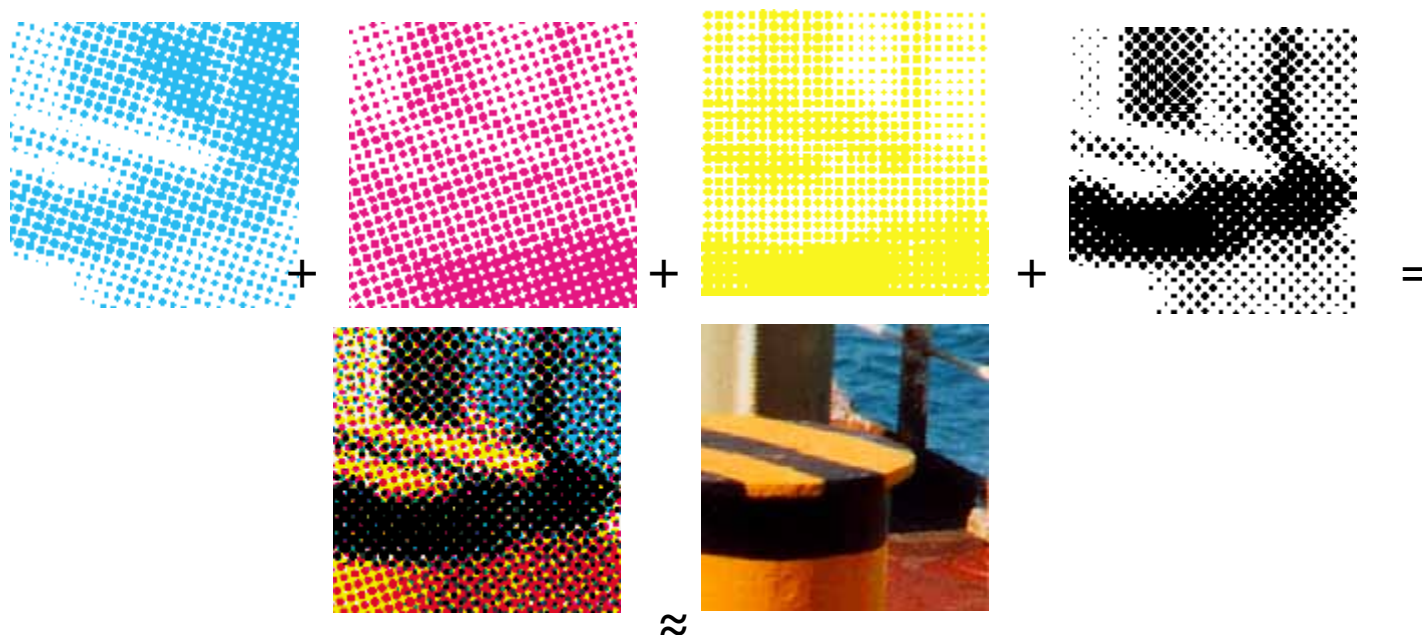
- CMYK stands for the primary additive colors
 - **CYAN**
 - **MAGENTA**
 - **YELLOW**
 - **BLACK**
- The “K” stands for “key,” which is short for “key plate” (printing term)



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Color Model: CMYK

- Used especially in the printing of images



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Using the color wheel...

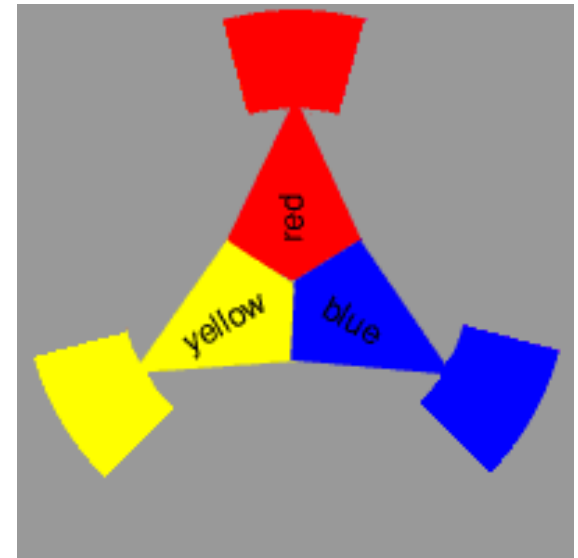
- The color wheel makes it simple to determine color schemes for a multimedia project
 - Types of Colors
 - Primary
 - Secondary
 - Tertiary
 - Complementary colors
 - Split-complementary
 - Triad
 - Analogous



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Using the color wheel...

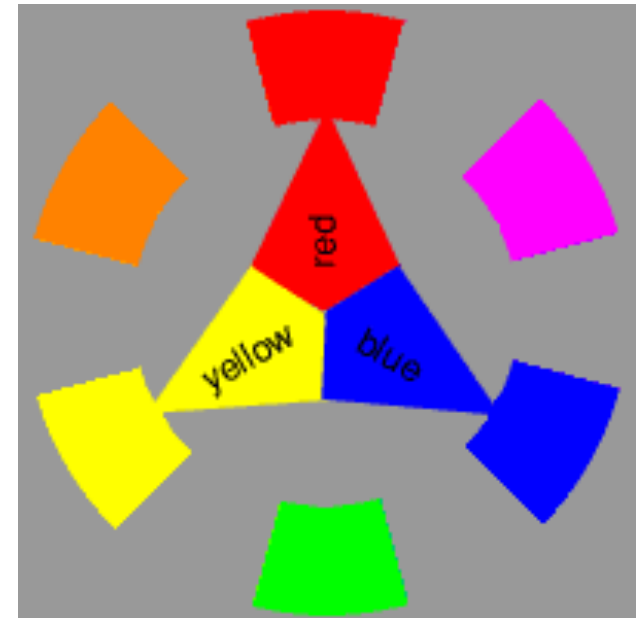
- Primary Colors
 - The defining colors of the wheel
 - In the traditional wheel, these consist of
 - **RED**
 - **BLUE**
 - **YELLOW**



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Using the color wheel...

- Secondary Colors
 - colors equidistant between the primary colors
 - In the traditional wheel, these consist of
 - **VIOLET** (blue and red)
 - **GREEN** (yellow and blue)
 - **ORANGE** (red and yellow)



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Using the color wheel...

- Tertiary Colors
 - colors between the primary color and secondary color
 - In the traditional wheel, these consist of
 - **RED-VIOLET**
 - **BLUE-VIOLET**
 - **BLUE- GREEN**
 - **YELLOW-GREEN**
 - **YELLOW-ORANGE**
 - **RED-ORANGE**



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Using the color wheel...

- Complementary Colors
 - Exist across from each other on the color wheel
 - A primary and a secondary
 - Contrast because they share no common colors (e.g., red and green (blue and yellow))
 - Produce excitement and “action”
 - Combining complements produces a neutral grey
 - Seen often in color schemes and logos
 - Example:
 - **BLUE** and **ORANGE**



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Using the color wheel...

- Split-Complementary Colors
 - Exist on either side of the complementary color
 - A primary and two tertiary
 - Contrast, but not as significantly as complementary colors
 - Example:
 - **BLUE** and
 - **YELLOW-ORANGE**
 - **RED-ORANGE**



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Using the color wheel...

- Triad Colors
 - Three colors located equidistantly around a color wheel
 - Primary colors
 - Secondary colors
 - Group of tertiary colors
 - Provides a balanced color scheme
 - Can be a good place to start exploring color palettes



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Using the color wheel...

- Analogous Colors
 - Colors adjacent to each other on the color wheel
 - Share enough common attributes that can complement each other
 - But, provides little contrast
 - Example:
 - **BLUE**
 - **BLUE- GREEN**
 - **GREEN**



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Selecting Your Color Scheme



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Two Important Issues to consider...

Message trying to send

Audience you are trying to reach



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Selecting Your Color Scheme

- **Age Differences**
 - Younger children prefer brighter, more solid colors
 - Adults prefer more subdued colors (i.e., light values/tints) (e.g., pastels)
- **Class Differences**
 - Working class prefer “named” colors: blue, red, green, etc.
 - More “highly educated” class prefers obscure colors: taupe, azure, mauve
- **Gender**
 - Men tend to prefer **cool colors** (blues and greens)
 - Women tend to prefer **warm colors** (reds and yellows)
- **Seasonal issues**
 - Winter = **blacks**, whites, **grays**
 - Spring = spring **greens** and bright **colors**
 - Summer = **yellows**
 - Fall = **browns** and **golds**



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Selecting Your Color Scheme

- Cultural Issues
 - Geography
 - Warm climates = strong colors
 - Cooler climates = cooler, “more washed out” colors
 - Colors and their common connotations in Western culture
 - Cultural Examples (next slide)

<u>Color</u>	<u>Positive</u>	<u>Negative</u>
White	Clean, innocent, pure	Cold, empty, sterile
Red	Strong, brave, passionate	Dangerous, aggressive, domineering
Yellow	Happy, friendly, optimistic	Cowardly, annoying, brash
Green	Natural, tranquil, relaxing	Jealous, inexperienced, greedy
Brown	Warm, earthy, mature	Dirty, sad, cheap
Blue	Strong, trustworthy, authoritative	Cold, depressing, gloomy



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Selecting Your Color Scheme – Cultural Examples

<u>Color</u>	<u>Country: Meaning</u>
Black	China: color for young boys Western: funerals, death, bad guys, rebellion
White	Japan: white carnation symbolizes death Eastern: funerals Western: brides, angels, good guys, hospitals, doctors, peace (white dove)
Red	China: good luck, celebration, summoning Cherokees: success, triumph India: purity South Africa: color of mourning Russia: Bolsheviks and Communism Eastern: Worn by brides Western: excitement, danger, love, passion, stop
Orange	Ireland: Religious (Protestants) Western: Halloween (with black), creativity, autumn



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Selecting Your Color Scheme – Cultural Examples

Color	Country: Meaning
Yellow	<p>China: nourishing</p> <p>Egypt: color of mourning</p> <p>Japan: courage</p> <p>India: merchants</p> <p>Western: hope, hazards, coward</p>
Green	<p>China: green hats indicate a man's wife is cheating on him, exorcism</p> <p>India: Islam</p> <p>Ireland: <the whole country></p> <p>Western: spring, new birth, go, St. Patrick's Day</p>
Blue	<p>Cherokees: defeat, trouble</p> <p>Iran: color of heaven and spirituality</p> <p>Western: depression, sadness, conservative, corporate</p>
Purple	<p>Thailand: color of mourning (widows)</p> <p>Western: royalty</p>



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Selecting Your Color Scheme

- **Setting Moods**

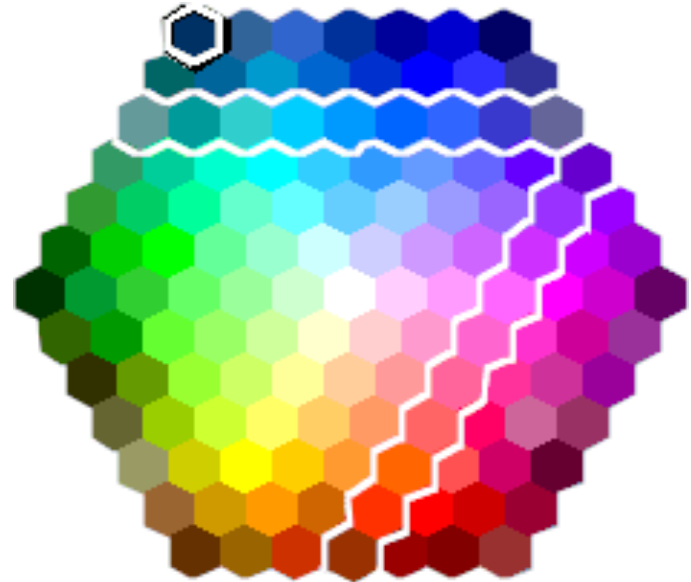
- Example: evidence suggests using **green** in the workplace results in less absenteeism through illness
- Univ. of Iowa coach painted visitors locker room **pink** because research shows that it reduces aggression



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Selecting Your Color Scheme

- **Using tools**
 - MS color palette allows you to select **rows** for “harmonious” color schemes



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Conclusion

- Color Terms
 - Hue
 - Saturation
 - Value
- Color models
 - **HSV**
 - **RGB**
 - **CMYK**
- Color Wheel
 - Additive
 - Subtractive
- Color Choices
 - Age
 - Class
 - Gender
 - Season
 - Culture



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