THE DRAWING PATH

# Hue, Saturation & Value

## A Complete Lesson Plan

| BEGINNER | HOBBYIST | PROFESSIONAL |
|---|---|---|

Lesson 6 · Color Fundamentals

*Teach Yourself to See*

thedrawingpath.com

# Contents

SKILL LEVEL 1

# BEGINNER

Every color has three independent dimensions.

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# Hue, Saturation & Value — Beginner

## The Three Dimensions of Color

Every color can be completely described by three independent properties. **Hue** is the color's identity on the color wheel — red, orange, yellow, green, blue, violet. It answers the question: "What color is it?" **Saturation** (also called chroma or intensity) is how pure or vivid the color is. A fully saturated red is fire-engine red; zero saturation is a neutral grey at the same value. **Value** is the lightness or darkness of the color, independent of hue or saturation. A dark blue and a dark red may be different hues but the same value.

Understanding these three dimensions independently is essential because they can each be adjusted independently. You can change a color's hue without changing its value. You can reduce its saturation without changing either its hue or value. Most beginner color errors involve changing two or three dimensions simultaneously when only one change was intended.

**[ VISUAL EXAMPLE ]**

*Three axes: (1) Hue wheel — 12 colors in a circle. (2) Saturation strip — the same blue from 100% saturated (vivid blue) to 0% (neutral grey). (3) Value strip — the same blue from very light to very dark. Each axis labeled to show it is independent.*

## Common Mistakes

**Confusing saturation with value**

Making a color "brighter" by increasing its value (adding white) when "brighter" actually means more saturated. High saturation at a medium value is more vivid than high saturation at a high value (which looks pale).

**Ignoring value when selecting colors**

Choosing colors based on hue and saturation without checking their values. Colors that look different in hue may be identical in value, causing them to merge when viewed in greyscale.

**Mixing colors on only one dimension**

Mixing two hues without adjusting saturation, producing colors that are technically correct in hue but too vivid or dull for the intended use.

## Beginner Exercises

## HSV Identification Exercise

20 min

**TRAINS:** Reading the three dimensions from observation

**STEPS**

1. Find 10 color swatches, paint chips, or photographs.
2. For each: estimate (1) the hue (name the closest color wheel position), (2) the saturation (0–100%), (3) the value (1–10).
3. Write your estimates, then check with a digital color picker tool.
4. How accurate were your estimates? Which dimension was hardest to estimate accurately?

**SELF-EVALUATE:**

*Which HSV dimension was hardest to estimate accurately? How close were your estimates to the digital readings?*

## Saturation Reduction Study

25 min

**TRAINS:** Graying down a color family

**STEPS**

1. Choose one hue (e.g., blue).
2. Mix or create 5 versions from fully saturated to neutral grey — keeping the same hue and value throughout.
3. The only thing that changes is saturation.
4. This demonstrates that saturation is truly independent of hue and value.
5. Use a color picker to verify your mixes maintain consistent hue and value.

**SELF-EVALUATE:**

*Do all 5 versions maintain the same hue and value? Which saturation level is most useful for a specific application (e.g., painting skies, rocks, skin)?*

### Value Matching Across Hues

30 min

**TRAINS:** Finding equal-value colors

**STEPS**

1. Select 6 different hues from the color wheel.
2. Mix each hue to exactly value 5 (mid-grey) — the same value for all 6.
3. Convert each to greyscale and check: they should all be the same grey.
4. This is harder than it sounds — yellows are naturally high value, violets naturally low value.
5. Note: to bring yellow to value 5 requires significant darkening.

**SELF-EVALUATE:**

*Do all 6 hues convert to the same grey value? Which hue was hardest to match to value 5?*

### Color Wheel from Primaries

35 min

**TRAINS:** Mixing hue transitions

**STEPS**

1. Using only red, yellow, and blue (or cyan, magenta, and yellow for paint), mix a 12-step color wheel.
2. The 3 primary colors plus 3 secondary colors (orange, green, violet) plus 6 tertiary colors.
3. Focus on: even hue transitions between each step, consistent saturation, consistent value.
4. A consistent color wheel has all 12 colors at approximately the same value — which is challenging because of the natural value differences between hues.

**SELF-EVALUATE:**

*Are the 12 hue transitions even and consistent? Do all 12 colors appear at approximately the same value level?*

## Beginner Resources

**James Gurney — Color and Light**

gurneyjourney.com

Chapter on the color dimensions. The most accessible professional treatment of HSV for artists.

**Ctrl+Paint — Color Fundamentals**

ctrlpaint.com

Free library. The HSV and color dimensions series is essential for beginners.

**Josef Albers — Interaction of Color**

amazon.com/search?q=albers+interaction+of+color

The classic study of how colors interact. Chapter 1 covers the dimensions clearly.

SKILL LEVEL 2

# HOBBYIST

HSV in lighting, shadow, and design decisions.

2

# Hue, Saturation & Value — Hobbyist

## HSV Changes in Lighting and Shadow

When light hits a colored surface, all three HSV dimensions change simultaneously. In direct light: value increases, saturation often increases (colors appear more vivid in direct sunlight), and hue may shift slightly toward the light source's color. In shadow: value decreases, saturation typically decreases, and hue shifts toward the shadow's color (the sky or ambient light). The beginner error is only changing value for light and shadow — forgetting that saturation and hue also shift. Understanding these simultaneous shifts is the key to believable color rendering.

## Value-First Color Approach

The most reliable approach to color illustration: establish the value structure first in greyscale, then add color while preserving the value structure. This separates the two most critical decisions — value structure and color identity — so each can be solved independently. When applying color to a greyscale drawing, the rule is: the color at each point must match the value that was there in greyscale. Converting the final colored image back to greyscale should produce something close to the original greyscale drawing.

## Common Mistakes

**Only changing value in shadow — not saturation or hue**

Shadow areas that are correct in value but too saturated. Real shadows are typically less saturated than the lit surface.

**Value that shifts when color is applied**

The greyscale drawing is correct but when color is applied, some colors are naturally lighter or darker than their assigned value, disrupting the value structure.

**Saturation maximum in all areas**

Applying fully saturated colors throughout without considering that muted colors (reduced saturation) are generally more realistic and visually restful.

## Hobbyist Exercises

## Lit vs Shadow HSV Analysis

40 min

**TRAINS:** Measuring how HSV changes in light and shadow

**STEPS**

1. Photograph or observe a colored object (red apple, blue mug, orange fruit) under strong directional light.
2. Use a color picker to sample 5 points: deepest highlight, average lit area, terminator zone, mid-shadow, deepest shadow.
3. Record HSV values at each point.
4. Analyse: how do hue, saturation, and value each change from highlight to shadow?
5. Apply these findings to a painting of the same object.

**SELF-EVALUATE:**

*How do H, S, and V each change from highlight to shadow? Are the shifts consistent with what you expected, or were there surprises?*

## Greyscale-to-Color Conversion

45 min

**TRAINS:** Adding color while preserving value structure

**STEPS**

1. Create a greyscale drawing of a simple scene.
2. Colorize it by overlaying color while maintaining the underlying greyscale values.
3. Test: convert your colored version back to greyscale and compare to the original.
4. How closely do they match? Where did the values drift?
5. Correct any values that drifted during colorization.

**SELF-EVALUATE:**

*How closely does the reconverted greyscale match the original? Which colors were most prone to shifting the value when applied?*

### Limited Palette HSV Study

50 min

**TRAINS:** Working within a 3-color palette

**STEPS**

1. Choose 3 colors (one warm, one cool, one neutral) and mix only those.
2. Paint a small still life using only these 3 colors plus white and black.
3. For each area of the painting, describe the color in HSV terms before mixing.
4. Can a 3-color palette achieve all needed HSV combinations?

**SELF-EVALUATE:**

*What HSV ranges are achievable with a 3-color palette? What HSV combinations are out of reach?*

### Saturation Design Study

50 min

**TRAINS:** Strategic saturation for visual hierarchy

**STEPS**

1. Plan a still life or portrait where saturation is used strategically: highest saturation at the focal area, decreasing toward the edges.
2. Paint from the plan.
3. Does the saturation hierarchy direct attention to the focal area?
4. Compare to a version with uniform saturation throughout.

**SELF-EVALUATE:**

*Does the saturation hierarchy successfully direct attention? What saturation differential between focal and peripheral is needed to be effective?*

## Hobbyist Resources

**James Gurney — Color and Light**

gurneyjourney.com

HSV in lighting and shadow. The most complete treatment for illustrators.

**Ctrl+Paint — HSV Color Space**

ctrlpaint.com

Free. The HSV and value-first approach series.

**CGMA — Color and Light**

cgmasteracademy.com

Paid. Advanced color fundamentals in production illustration context.

SKILL LEVEL 3

# PROFESSIONAL

HSV as design language and color editing system.

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# Hue, Saturation & Value — Professional

## HSV as Design Language

At the professional level, HSV is a design decision language. Color decisions are described and evaluated in HSV terms: "the focal area needs higher saturation," "the shadow zone needs its hue shifted toward the sky color," "the background values need to be raised to push it back." This precise language enables collaboration — an art director can specify color changes in HSV terms, and the artist can implement them systematically. Professional color revision is executed through targeted HSV adjustments, not by repainting.

## HSV Color Editing

In digital production, HSV adjustments are made through non-destructive color editing tools (Hue/Saturation layers in Photoshop, HSV nodes in digital painting software). The professional understands exactly which HSV dimension to adjust to achieve a specific visual result: too garish = reduce saturation; too flat = increase saturation; too dark = increase value; wrong color = adjust hue. These targeted adjustments prevent the common error of adjusting everything when only one dimension is wrong.

## Common Mistakes

**Adjusting multiple HSV dimensions when only one is wrong**

Using a global color curves adjustment that changes all three dimensions when only one needs correction.

**Saturation that varies inconsistently with the color scheme**

Some colors at full saturation, others at zero, with no logical system governing which are which. Saturation decisions should be systematic.

**HSV decisions made without a color brief**

No prior specification of the saturation and value ranges intended for the work, leading to ad-hoc color decisions that lack cohesion.

## Professional Exercises

## HSV Color Brief

120 min

**TRAINS:** Specifying color before painting

**STEPS**

1. Before creating a full illustration, write an HSV color brief: specify (1) the value range for the overall key (high, mid, or low), (2) the saturation range (vivid, muted, or mixed), (3) the hue range (warm dominant, cool dominant, or complementary).
2. Create the illustration strictly from the brief.
3. Evaluate: does the brief produce a coherent color result? What was under-specified?

**SELF-EVALUATE:**

*Does the HSV brief produce a coherent color result? What would you add to the brief for a future illustration?*

## Targeted HSV Correction

45 min

**TRAINS:** Editing a color problem with precision

**STEPS**

1. Take an existing illustration (your own or a study from another source) with a clear color problem: too garish, too flat, wrong temperature.
2. Diagnose the problem in HSV terms: which dimension is wrong?
3. Apply only targeted corrections to the identified dimension.
4. Compare before and after: did the targeted correction fix the problem without introducing new ones?

**SELF-EVALUATE:**

*Did the targeted HSV correction fix the problem? Did any secondary problems appear from the correction?*

### Consistent HSV Across a Series

4 × 60 min

**TRAINS:** Maintaining color language in a body of work

**STEPS**

1. Create 4 illustrations as a series (same world, same visual language).
2. Write an HSV specification for the series before beginning.
3. Apply the specification consistently.
4. Compare all 4: do they feel like they share an HSV language? Where did the specification drift?

**SELF-EVALUATE:**

*Do all 4 illustrations share a coherent HSV language? What was most difficult to maintain consistently across the series?*

### HSV Mood Engineering

60 min

**TRAINS:** Designing HSV for specific emotional targets

**STEPS**

1. Define 4 emotional targets: serene, tense, joyful, melancholy.
2. For each: write an HSV specification that would produce that emotional register.
3. Create a color swatch set (not a full illustration) demonstrating each specification.
4. Test with observers: can they identify the intended emotion from the swatches?

**SELF-EVALUATE:**

*Do observers correctly identify the intended emotion from each swatch set? Which emotional target was hardest to produce through HSV specification alone?*

## Professional Resources

**James Gurney — Color and Light**

gurneyjourney.com

The professional standard for HSV in illustration. Required reading.

**Josef Albers — Interaction of Color**

amazon.com/search?q=albers+interaction+of+color

The foundational academic study of color interaction, including HSV relationships.

**Ctrl+Paint — Advanced Color**

ctrlpaint.com

Free. The advanced color series covers professional HSV editing and design decisions.

# Master Exercise Index

*All exercises consolidated for quick reference.*

## Beginner

| # | Exercise Name | What It Trains | Duration |
|---|---|---|---|
| B1 | HSV Identification | Reading 3 dimensions | 20 min |
| B2 | Saturation Reduction Study | Independent saturation | 25 min |
| B3 | Value Matching Across Hues | Equal-value colors | 30 min |
| B4 | Color Wheel from Primaries | 12-step mixing | 35 min |

## Hobbyist

| # | Exercise Name | What It Trains | Duration |
|---|---|---|---|
| H1 | Lit vs Shadow HSV Analysis | Measuring HSV shifts | 40 min |
| H2 | Greyscale-to-Color | Adding color preserving value | 45 min |
| H3 | Limited Palette HSV | 3-color study | 50 min |
| H4 | Saturation Design Study | Hierarchy through saturation | 50 min |

## Professional

| # | Exercise Name | What It Trains | Duration |
|---|---|---|---|
| P1 | HSV Color Brief | Specifying before painting | 120 min |
| P2 | Targeted HSV Correction | Precision color editing | 45 min |
| P3 | Consistent HSV Series | Body of work language | 4×60 min |
| P4 | HSV Mood Engineering | Emotional targeting | 60 min |

# Resource Directory

*All recommended resources, consolidated.*

## Beginner

| Resource | URL | Notes |
|---|---|---|
| **James Gurney Color Light** | gurneyjourney.com | Accessible HSV treatment |
| **Ctrl+Paint Color Fundamentals** | ctrlpaint.com | Free HSV series |
| **Albers Interaction of Color** | amazon.com | Classic color dimensions |

## Hobbyist

| Resource | URL | Notes |
|---|---|---|
| **James Gurney Color Light** | gurneyjourney.com | HSV in lighting shadow |
| **Ctrl+Paint HSV Color Space** | ctrlpaint.com | Free value-first approach |
| **CGMA Color Light** | cgmasteracademy.com | Paid advanced fundamentals |

## Professional

| Resource | URL | Notes |
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| **James Gurney Color Light** | gurneyjourney.com | Professional standard |
| **Albers Interaction of Color** | amazon.com | Foundational academic study |
| **Ctrl+Paint Advanced Color** | ctrlpaint.com | Free professional HSV editing |