Botanical Illustration for the Classroom

*Bringing Art to Science...*

Partially supported with funds provided by the American Society of Botanical Artists
Applying botanical illustration techniques to teach science in the classroom

Skills

- Scientific observation (Both qualitative and quantitative)
- Drawing
- Attention to detail
- Following a method
- Neatness
- Completeness
Is it complete?
Is it neat?
Students improve with exposure to techniques of observation, drawing and painting.
First Hour
Introduction to Botanical Illustration as it can be applied in the classroom with a demonstration

Second Hour
Hands on workshop
How will this be useful in the classroom

- Enabling students to produce quality work in recording observations in science
- Give teachers confidence and techniques in teaching drawing and observational skills
- Provides context for students exploring and understanding the history of recorded science illustration
- Promotes discipline in observing and recording data
- Provides a different and rewarding approach to curriculum diversification
Botanical Illustration
a la carte

- History
- Science
- Botanical Illustration
- Art Skills
- Career Educations
History

• Early man
• Egypt
• Greece
• Rome
• Europe
• Today
Early Man

FIGURE 1. Plant form. Scratched on bone; paleolithic
Ancient Egyptian Times

FIGURE 2. *Dracunculus vulgaris* seedlings. Egyptian stone relief in the Great Temple of Tuthmosis III at Karnak, c. 1450 B.C.
Greece
Rome and the Renaissance

Michelangelo
Europe

Herbals

Horticulture including new plant species have been recorded through history by paintings prior to photography.
Explorer’s Records

Captain Cook’s Second Voyage 1772 – 75

Johann Georg Forster

World explorers brought artists with them to collect and record plants by painting and journaling.
England early 1800
Mrs. Augusta Withers

Early European women’s “refinement” lessons required training in painting in botanical art.

Botanical painting was a way women could contribute to science.
Dutch Masters

European royal families maintained elaborate gardens and retained botanical painters.
Today

- A demand for illustration of plants for science books, art pieces, and other publications.
- Botanical art can depict more accurately than photos
Art Skills

• Media techniques (materials, media, mixing colors, moving color, building form, etc)
• Drawing
• Perspective
• Composition
• Observation
• Appreciation of accuracy, neatness, patience
Science

- Observation
- Measurement
- Recording data
- Accuracy
- Diversity in nature
- Identification
- Ecology
- Ecozones
- Relationships in nature
- Classification
- Anatomy
- Life cycles/reproduction
Botanical Illustration

• Multiple Step Method
  – Getting to know your subject
  – Drawing
  – Composition
  – Transferring the Image
  – Tea Stage
  – Building form (making 2D into 3D)
  – Overlap (defining depth)
  – Details (adding what you see)
  – Transition (tying it all together)
  – Finishing
Getting to know your subject
Drawing
Composition
Transferring the Image
Tea Stage
Building form (making 2D into 3D)
Overlap
(defining depth)
Details (adding what you see)
Transition
(tying it all together)
Finishing
Media Techniques

• Which materials to use?

• How do you chose and mix colors?

• How do you move paint?

• How do you show 3D on 2D surface?

• How do you transfer images?
How do you choose and mix colors?
How do you move paint?
How do you transfer images?
How do you show 3D on 2D surface?
Perspective

How to capture in a drawing?
Composition

- How do you make the painting appear real and attractive?
- How large should the subject be?
- How much of the plant should I show?
- Do the things in front look different than the things in back?
Observation

- Looking at all the details
  - Connections
    - between stem and leaf
  - Leaves
    - surface
    - veins
    - habit
    - color
  - Size of each part
    - orientation
Classification

Binomial nomenclature

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

Using Taxonomic Keys
New Methods for Identification

Linnaeus
Anatomy

- Identifying parts and their functions
- Roots, stems, leaves, flowers, fruits
- Dissection techniques
Ecology

- Understanding a plant’s habitat and its function in that ecosystem.
- Observing other plants that grow with it and why.
- Understanding where it grows and why.
Life Cycles & Reproduction

- Understanding different stages of the plant's life cycle.
– Differentiating reproductive parts, understanding their function.

– Learning the life cycle’s importance in identification of plants.
Understanding plant survival mechanisms.
Life Skills

- Patience
- Observation
- Accuracy
- Following a method
- Approach to neatness
Patient

It takes *time* to:
- Observe the plant's details
- Draw the details accurately
- Create the right paint color
- Carefully paint it
Observation

- Looking at each part of the plant
- Creating accurate line and shape details.
- Reproducing accurate color.
- Figuring out how to represent textures.
- Understanding light and creating form to achieve realism.
Accuracy

- Drawing what is seen including:
  - contour
  - lines
  - color
  - perspective
Careers and Opportunities

- Field Scientist
- Botanical Artist
- Art Instructor
- Book Illustrator
- Scientific Illustrator
- Medical Illustrator
- Working for Museums
- Working for Gardens
- Others
Demonstration

• Drawing simple object
  – Measurement technique, Plexiglas
• Composition decisions
• Transferring image
  – Light box, Transfer Paper, Graphite
• Tea Stage
  – Colors
• Analyzing Form
• Moving Paint, Building Form
Hands On

- Materials
- Draw object freehand
- Draw object from multiple perspectives with Plexiglas tracing frame
- Decide on best composition for purpose
- Use tracing paper to transfer image to white watercolor paper
- Use tracing paper to understand shading and contours
- Discussion about how to use in classroom
Hands On continued

• Additional exercises
  – Mixing colors and choosing the right ones
  – Moving paint and brush strokes
  – Creating notes and a record of the experience for future reference
How could you use this to --

- Scientific observation (Both qualitative and quantitative)
- Drawing
- Attention to detail
- Following a method
- Neatness
- Completeness
Thank you