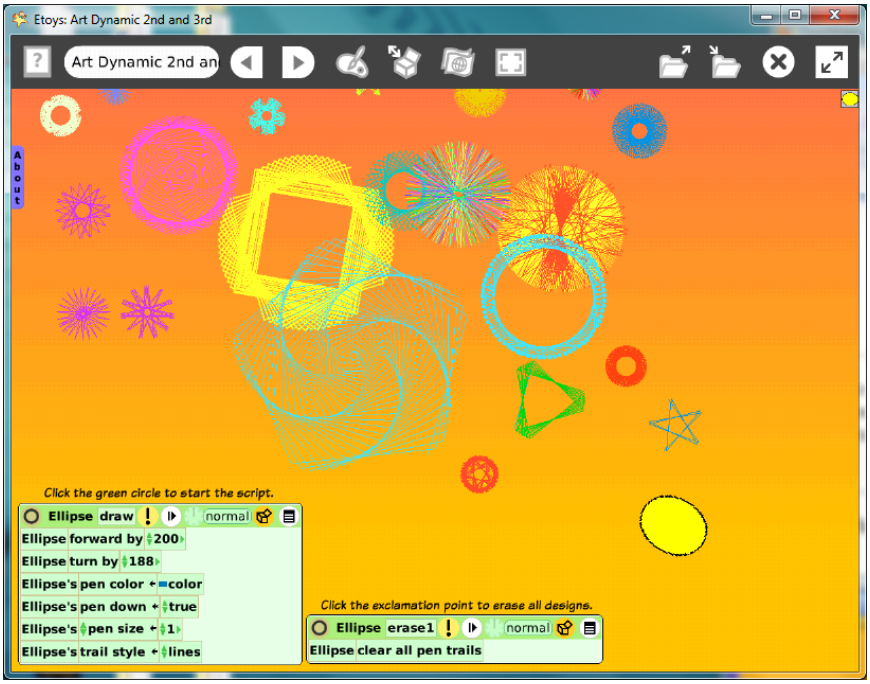
Art
Patterns-Dynamic-Patterns
Second – Third Grade Levels



Introduction:	Students use Etoys to make beautiful, dynamic patterns. Dynamic, because the patterns are created by a shape that has been scripted to move. Technology makes it easy to try many ideas, to experiment with changes, and to save patterns and design elements the artist wants to remember and enjoy.
Topic:	Students use an ellipse from the Supplies flap and write scripts to make it move. Pen trail tiles are added to the script to show the path of motion from combinations of forward and turn. The trails can be any color and any width; they can go forward and backward; they can turn clockwise and counter clockwise. Students become familiar with elements of design: line, shape, scale, and color. They also become familiar with elements of mathematics: angle and length. The lessons use a vocabulary of words common in art, mathematics, and everyday experience.
Subject:	**Art**

Time:	Lesson 1 Two labs Lesson 2 One lab
Description:	Students will use script tiles to create patterns with interesting and beautiful geometries. Technology tools make it easy to try many ideas. They experiment with color, angles, scale, and the position of design elements on the screen.
Vocabulary:	angles, 90 degrees, 120 degrees, 60 degrees, 'X' degrees, symmetry, asymmetry, symmetrical, asymmetrical, double, half, warm colors, cool colors, line, shape, triangle, square, circle, rectangle, contrast, scale, size, large, medium, small, pattern, duplicate, copy, set, sequence, above, below, beside, before, left, right, upper, lower, edge, near, up, down, between, almost, add, subtract, equals, exactly
Evaluation Criteria:	Uses appropriate vocabulary when describing a pattern. Knows concepts: more than, less than, the same as, half, and double. Demonstrates an understanding of scale and uses the term correctly. Gives directions clearly and audibly. Uses complete sentences when giving directions. Creates patterns using two script tiles: forward by and turn by. Uses clear all pen trails as a tile in a second script and understands why it must be a separate script. Knows how to Keep and Find a project. Works independently for 30 minutes or longer.
Teacher Information: **Etoys Quick Guides:** Click the question mark in Etoys to open the set of tutorials about basic tools and techniques.	Use Etoys Quick Guides if the lesson mentions unfamiliar tools or techniques. Give students time to read them too. **Etoys Quick Guides:** Click the question mark in Etoys to open the set of tutorials about basic tools and techniques.
Goals:	Students will write Etoys scripts to make an object move on the screen with controlled distances and angles. Students explore mathematical ideas and find that beautiful patterns may be created when things move.

	Student's experiences help them develop a sense of angle and line segments. These understandings are useful on the screen, on paper, and in the real world.
Lesson 1: Two labs Halo Handles: Viewer Script Tiles: Forward by and Turn by Script Tiles: Pen Use Supplies: Text Navigator Bar: Keep Find Projects	Students use an ellipse and create scripted motion for it. The ellipse will leave a pen trail as it moves. The values used in the forward by and turn by tiles can be changed easily. Drag an Ellipse from Supplies and open a Viewer for it. Make a script with forward by and turn by in one Scriptor. Click on basic to see a category menu, choose pen use. Add four of the tiles to the Scriptor that is already open. Drag these four tiles by the big green arrow. Ellipse's penColor Ellipse's penDown Ellipse's penSize Ellipse's trailStyle Make another script with clear all pen trails. Click on the exclamation mark to run a script once. Use the world's Viewer to change the background color; choose fill and border. Experiment with all four tiles in this category. Change values in the forward by and turn by tiles. Suggest students remember the settings or use Text, if they find a design they like very much. Give students time to experiment with all of these choices. Keep the project: namedynamicdate E.G. katedynamicfeb308
Lesson 2 One lab	Students learn to control the turn by value to produce a set of familiar geometric polygons. Give students this example for a hexagon (360/60=6): forward by 100

	turn by 60 Discuss what they observed and why. Make sure their ellipse is in the center of the screen so it does not bump into the edge. Ask students if they can find what turn by number will make a square (turn by 90), a triangle (turn by 120), a pentagon (turn by 72). Ask students to experiment and describe what happens when the forward by number is: double the original forward by length or half the original forward by length. Ask students to experiment and discuss what happens when the turn by number is: double or half the original turn by value. Keep this project. There is no need to change the name of the project a version number is added automatically.
Student Information:	Give students examples of polygons and the angles that create them.
Standards:	Art National Standards for Art Education Kindergarten-Fourth Grade Visual Arts Content Standard: 1 Understanding and applying media, techniques, and processes Content Standard: 2 Using knowledge of structures and functions Content Standard: 3 Choosing and evaluating a range of subject matter, symbols, and ideas Content Standard: 4 Understanding the visual arts in relation to history and cultures Content Standard: 5 Reflecting upon and assessing the characteristics and merits of their work and the work of others Content Standard: 6 Making connections between visual arts and other disciplines Mathematics Illinois Performance Standards

	Second Grade: 8A, 8B, 8D Patterns and Rules Practice repeated doubling and halving 9A 9B 7A 3-D and 2-D shapes Find common attributes of shape by exploring rules and directions Third Grade: 6B, 6C Extension of Addition and Subtraction facts 7C Measure perimeter of polygons 9A, 9B Geometry: Angles and turns Language Arts Illinois State Goals K-3 Listening 4. A.1a Listen attentively by facing the speaker, making eye contact and paraphrasing what is said. 4. A.1b Ask questions and respond to questions from the teacher and from group members to improve comprehension. 4. A.1c Follow oral instructions accurately. 4. A.1d Use visually oriented and auditory based media Language Arts Illinois State Goals K-3 Speaking 4.B.1a Present brief oral reports, using language and vocabulary appropriate to the message and audience (e.g. show and tell 4. B.1b Participate in discussions around a common topic. National Educational Technology Standards (NETS) 1. Basic operations and concepts Students are proficient in the use of technology. 2. Social, ethical, and human issues Students practice responsible use of technology systems, information, and software. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity. 3. Technology productivity tools Students use technology tools to enhance learning, increase productivity, and promote creativity. Students use productivity tools to collaborate in constructing

	technology-enhanced models, prepare publications, and produce other creative works 4. Technology communications tools Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences. 6. Technology problem-solving and decision-making tools Students use technology resources for solving problems and making informed decisions. Students employ technology in the development of strategies for solving problems in the real world.
Resources:	Etoys Help Quick Guides: Open Etoys and click the question mark in the Navigator Bar to open a set of interactive tutorials that introduce basic tools and techniques. **EtoysIllinois.org** for projects, tutorials, and lesson plans **Squeakland.org** for projects
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