Instructional Days: 7-9

Topic Description:

This lesson reinforces the four main phases in the problem-solving process.

Objectives: The students will be able to:

• •Solve a problem by applying the problem-solving process.

• •Express a solution using standard design tools.

• •Determine if a given solution successfully solves a stated problem.

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• Outline of the Lesson:

• Cultural background of cornrow braiding (15 minutes)

• Group discussion on cultural background of cornrow braiding (15 minutes)

• Cornrow curves design tool tutorial (80 minutes)

• Cornrow curves project (50 minutes)

• Gallery walk (5 minutes)

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• Student Activities:

• Work individually to review the history of cornrow braiding.

• Work in groups to answer reflection question and share with the remainder of the class.

• Work with elbow partner to complete the tutorial.

• Work individually to complete cornrow curves project.

• Participate in gallery walk.

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• Teaching/Learning Strategies:

• Cultural background of cornrow braiding

• Students read the cultural background and how to braid sections (csdt.rpi.edu, Cornrow Curves).

• Group discussion on cultural background of cornrow braiding

• Divide students into groups of 3-4 and ask each group to reflect on one of the following sections:

• African Origins

• Middle Passage

• Civil War to Civil Rights

• Hip Hop

• Each group shares their response with the rest of the class.

• Cornrow curves design tool tutorial

• Individual students complete Part I of the tutorial following all instructions and checking their work with their elbow partner.

• Discuss any issues as a class before proceeding to Part II.

• Complete Part II of the design tutorial.

• Stress mathematics and structured inquiry.

• Reinforce concepts such as iteration, dilation, translation.

• Cornrow curves project

• Each group of students should complete the following:

• Students create their own design.

• Describe each step of the problem-solving process used.

• Highlight the mathematical concepts used and where and how they are used.

• Reinforce the strategy of finding a similar problem that has already been solved to help solve the new problem.

• Gallery walk of designs

• Students share their solutions.

Resources:

• Culturally Situated Design Tools Cornrow Curves—csdt.rpi.edu (courtesy Ron Eglash)