**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.
* 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)

**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.

**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)