Classroom Activity with Thevenin and Norton Equivalent Networks

1) Present the entire class with a problem to determine both the Thevenin and Norton equivalent of a given network.

2) Form the class into groups of 3 students each (1 or 2 groups may have 4 students if the class size is not evenly divisible by 3.) In each 3-student group have one member responsible for determining V_{oc}, one member responsible for determining I_{sc}, and one member responsible for determining R_{th}.

3) Reorganize the class into groups of 3-5 students each, with each group consisting entirely of students with the same responsibility, e.g. having to determine V_{oc}. Allow each group sufficient time for members to collaboratively work on their problem.

4) Reconvene the 3-student groups formed in step (2). Have each member, in turn, present the solution to their part of the problem, e.g. determining V_{oc}, to the other 2 members of the group. After each member has presented their solution, have the group members collectively agree on the Thevenin and Norton equivalent networks of the given network. Have the members work collaboratively to answer some reflective questions pertaining to their solution, e.g.

   (i)   How much power would a 10Ω load draw from the original network?

   (ii)   What is the maximum power that the original network can deliver to a resistive load?

   (iii)   In retrospect, to minimize one's effort in solving this problem, which one of the 3 quantities (V_{oc}, I_{sc}, or R_{th}) should have been determined from the other 2 (using the relation $V_{oc} = I_{sc} * R_{th}$)?