Worksheet: Calculating Cohen's d with pooled SD

If you want to calculate this in Excel, print this sheet out and enter the results of each step in appropriately named cells and then use the formulas provided to make reference to those cells.
We have entered a sample calculation for you so you can follow the steps. In this scenario we are looking at two groups, an experimental and a control group:

	Experimental group	**Control group**
N	95	98
M	15	17
SD	3.5	4.1

Step 1 **Determine N_1**: Fill in the number of individual values (of this variable) in the experimental group.

N_1:
95

Step 2 **Determine N_2**: Fill in the number of values in the control group.

N_2:
98

Step 3 **Determine X_1**: Fill in the mean of the experimental group.

X_1:
15

Step 4 **Determine X_2**: Fill in the mean of the control group.

X_2:
17

Step 5 **Determine SD_1** : Fill in the SD of the experimental group.

SD_1:
3.5

Step 6 **Determine SD_2**: Fill in the SD for the control group.

SD_2:
4

Step 7 **Calculate $\boldsymbol{SD_1^2}$**: Square the result of step 5.

In Excel, you can square values by multiplying a number of cell range with itself. For example, if you had entered the value for SD_1 into cell a1, you can calculate SD_1^2 by either using =a1*a1, or by multiplying the actual value with itself.

SD_1^2:
$3.5^2 = 12.25$

Step 8 **Compute $\boldsymbol{SD_2^2}$**: Square the result of step 6.

SD_2^2:
$4.1^2 = 16.81$

Step 9 **Calculate $\boldsymbol{(n_1 - 1)SD_1^2}$**: Subtract 1 from N_1 and multiply it with the result of step 7.

$(n_1 - 1)SD_1^2$:
$(95 - 1) * 12.25 = 94 * 12.25 = 1151.5$

Step 10 **Calculate $\boldsymbol{(n_2 - 1)SD_2^2}$**: Subtract 1 from N_2 and multiply the result with the result of step 8.

$(n_2 - 1)SD_2^2$:
$(98 - 1) * 16.81 = 96 * 16.81 = 1630.57$

Step 11 **Compute $\boldsymbol{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}$**: Add the results of step 9 and 10.

$(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2$:
$1151.5 + 1630.57 = 2782.07$

Step 12 **Calculate $\boldsymbol{N_1 + N_2 - 2}$**:
$95 + 98 - 2 = 191$

Step 13 **Compute the pooled variance:** Divide the result of step 11 by the result of step 12.

$Variance_{pooled}$:
$\frac{2782.07}{191} = 14.57$

Step 14 **Compute $\boldsymbol{SD_{pooled}}$:** Calculate the square root of the result of step 13. In Excel you can use the sqrt function.

SD_{pooled}:
$\sqrt{14.57} = 3.82$

Step 15 **Calculate $X_1 - X_2$:**

15-17 = 2

Step 15 **Compute Cohen's *d*:** Divide the result of step 15 by the result of step 14.

Cohen's d:

$$\frac{-2}{3.82} = -0.52$$