Homework problem (to be solved before the exercise session)

The new minister of education of Never-never land strongly believes that hair color has an effect on ability to learn. The null-hypothesis "Hair color does not have an effect on learning outcomes" was tested at a significance level of 5% in two different schools. The p-values of the tests were both larger than 0.05 and the minister of education was not able to reject the null hypothesis. The minister was very unhappy with the results and decided to test the same null-hypothesis in each of the Never-never land's 3000 schools. The p-value of the test was less than 0.05 in 137 schools. The minister of education is excited about the test results - finally his belief has been proven right! What went wrong, explain?

- First problem: the p-value is lower in those 137 schools means that the null hypothesis may be correct in those schools. Such results however cannot be generalized to all 3000 Neverland's schools.
- Second problem: The Null Hypothesis stating that hair color doesn't have an effect on learning outcomes. But this is a general statement that can be applied to all students. Testing only at Neverland's schools does not quantify the same hypothesis at other different schools.

From these two problems, it can be seen that the minister is making Type II error: accepting the false null hypothesis.