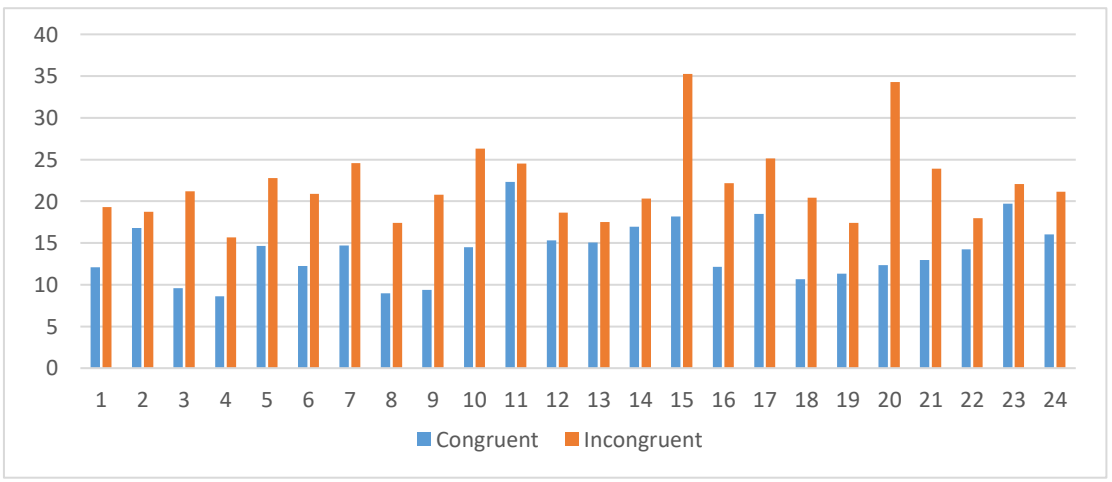
<table>
<tr><td>Question 1: Identify variables in the experiment</td><td colspan="2">Independent variables: the words are congruent with the colors or incongruent
Dependent variables: the amount of time it takes to name with the color in which the words are displayed.</td></tr>
<tr><td>Question 2a: Establish hypotheses</td><td colspan="2">μ0 = Time(Sample_Congruent_Avg), μ = Time(Sample_Incongruent_Avg)
H0: μ = μ0 Different conditions but almost close time took.
H1: μ > μ0 Congruent test took less time than Icongruent test.</td></tr>
<tr><td>Question 2b: Establish a statistical test</td><td colspan="2">When the written color name differs from the color ink it is printed in. If must say the written word, my opinion is that take all most same time as congruent, even if it can be affected, but minimal, just say the word. If must name the link color instead, we will get more affected, the brain needs to use more attention to recognize a color than to word encoding, so it takes a little longer. Then the experiment by name the link color should be significant and meaningful.
Choices about t-test and z-test, firstly, congruent and incongruent are two difference conditions, and congruent as pre-test, incongruent as post-test, furthermore, it looks like longitudinal study. So it is t-test.
The experiment is prefer to one tailed test, normally, μ >= μ0 all the time.
Assumptions: one-tailed, T-test and CI=99%.</td></tr>
<tr><td rowspan="4">Question 3: Report descriptive statistics</td><td>Min(Congruent)=8.63
Median(Congruent)=14.3565
Max(Congruent)=22.328
μ(Congurent)=μ0=14.051125
size(Congruent)=24
σ(Congruent-sample)=3.559357958
SE(Congruent-sample)=0.726550901</td><td>Min(Incongruent)=15.687
Median(Incongruent)=21.0175
Max(Incongruent)=35.255
μ(Incongruent)=μ=22.01591667
size(Incongruent)=24
σ(Incongruent-sample)=4.797057122
SE(Incongruent-sample)=0.979195185</td></tr>
<tr><td colspan="2">z-score=2.33</td></tr>
<tr><td>Cong_CI(95%) = (12.3582614, 15.7439886)</td><td>Incong_CI(95%) = (19.73439189, 24.29744145)</td></tr>
<tr><td colspan="2">As the values, especially μ and CI tell μ > μ0</td></tr>
<tr><td>Question 4: Plot the data</td><td colspan="2"> 

According to the graph, all people, own orange bar all higher than own blue bar, that means all Incongruent tests took longer time than Congruent tests.</td></tr>
<tr><td>Question 5: Perform the statistical test and interpret your results</td><td colspan="2">The samples are dependent and paired.
Decision: T-test (some values reference Q3)
S=4.8648269
t-statistic=-8.02071
According to t-table, t-critical = -2.5, the P-value < 0.01.
Compare t(z)-statistic and t(z)-critical, certainly μ > μ0.</td></tr>
<tr><td>Question 6: Digging deeper and extending the investigation</td><td colspan="2">Primary simultaneous interpretation(two languages stroop) and numbers stroop that to count the number of words in each box, which Do NOT say what the word says and so on are similar to this test.</td></tr>
</table>

Refer

https://en.wikipedia.org/wiki/Stroop_effect
http://baike.baidu.com/link?url=4t-mAs3S2dULT_8hZZr57s8lgmykHTs0Qmr27ikvBbAbEk5cZCyYCGvMfb3QwEVP9gA4gW2FHXjp4TJxKq4JPjF6zrd
http://blog.sina.com.cn/s/blog_52510b1d01014xku.html