1. Your project compares first, second and third graders on creativity. They all draw a picture and you rate them on a 25 point scale.

 H0:

HA:

 First graders Second graders Third graders

 25 12 12

 24 15 15

 19 17 10

 19 18 11

 18 17 15

 ∑X 105 79 63

 ∑X2 2247 1271 815

 Complete the source table:

 Source SS df s2 F

 Between

 Within

 Total

 What do you conclude about your Null Hypothesis?

Describe what this conclusion tells you about the population means of creativity for first,

second and third graders.

Describe the error you could be making with this conclusion.

 How often will it happen?

What do you need to do next?

ANSWERS

H0: The three population creativity means are all the same; HA: at least one population mean is different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 179.733 | 2 | 89.867 | 12.540 | .001 |
| Within Groups | 86.000 | 12 | 7.167 |  |  |
| Total | 265.733 | 14 |  |  |  |

 Reject the Null hypothesis

At least one grade’s pop mean creativity is prob different.

The differences among the means could be coincidence.

0.1% of the time.

Post Hoc testing

2. Your next project compares fourth, fifth and sixth graders on attention span. You have their teachers rate them on how much they pay attention in class.

H0:

 HA:

 Fourth graders Fifth graders Sixth graders

 14 15 13

 16 13 15

 15 15 15

 15 16 13

 14 15 16

 16 15 12

 ∑X 90 89 84

 ∑X2 1354 1325 1188

 Complete the source table:

 Source SS df s2 F

 Between

 Within

 Total

What do you conclude about your Null Hypothesis?

Describe what this conclusion tells you about the population means of fourth, fifth and sixth

graders’ attention spans.

Describe the error you could be making with this conclusion.

The power for this experiment is .39. Explain what this means.

 How often will this error occur?

 What 2 things could you do to make this error rate go down?

ANSWERS

H0: The three population means for attention time are all the same; HA: At least one population

mean is different.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 3.444 | 2 | 1.722 | 1.240 | .317 |
| Within Groups | 20.833 | 15 | 1.389 |  |  |
| Total | 24.278 | 17 |  |  |  |

Retain the Null hypothesis.

The three population averages are prob the same.

At least one population average attention span could be different.

With this experiment design, you would be able to reject the null 39% of the time.

61% of the time.

Any two things that increase power.