

# Summary of nonparametric statistics analysis for the scores of Interest/Enjoyment in the first study for students with effective participation

Table 1: Summary of Scheirer-Ray-Hare results for the scores of Interest/Enjoyment in the first study for students with effective participation

|                  | Df | Sum Sq   | H     | p.value | Sig |
|------------------|----|----------|-------|---------|-----|
| Type             |    |          |       |         |     |
| Type:Type        | 1  | 362.143  | 1.860 | 0.173   |     |
| Type:CLRole      | 1  | 50.021   | 0.257 | 0.612   |     |
| Type:Type:CLRole | 1  | 439.215  | 2.256 | 0.133   |     |
| Type:Residuals   | 44 | 8300.621 |       |         |     |

Signif. codes: 0 “\*\*\*” 0.01 “\*\*” 0.05

Table 2: Descriptive statistic of the pair wilcoxon analysis for the scores of Interest/Enjoyment in the first study for students with effective participation

|                    | Group               | N  | Median | Mean.Ranks | Sum.Ranks | U  | Z     | p.value | r     | magnitude |
|--------------------|---------------------|----|--------|------------|-----------|----|-------|---------|-------|-----------|
| Type:CLRole.less.1 | non-gamified.Master | 10 | 3.83   | 9.20       | 92        | 37 | -1.94 | 0.026   | 0.396 | medium    |
| Type:CLRole.less.2 | ont-gamified.Master | 14 | 5.17   | 14.86      | 208       | 37 | -1.94 | 0.026   | 0.396 | medium    |

Table 3: Full descriptive statistic of the pair wilcoxon analysis for the scores of Interest/Enjoyment in the first study for students with effective participation

|                          | Group                   | N  | Median | Mean.Ranks | Sum.Ranks | U     | Z     | p.value | r     | magnitude |
|--------------------------|-------------------------|----|--------|------------|-----------|-------|-------|---------|-------|-----------|
| Type.less.1              | non-gamified            | 20 | 4.00   | 21.25      | 425.0     | 215.0 | -1.36 | 0.088   | 0.197 | small     |
| Type.less.2              | ont-gamified            | 28 | 4.83   | 26.82      | 751.0     | 215.0 | -1.36 | 0.088   | 0.197 | small     |
| Type.greater.1           | non-gamified            | 20 | 4.00   | 21.25      | 425.0     | 215.0 | -1.36 | 0.914   | 0.197 | small     |
| Type.greater.2           | ont-gamified            | 28 | 4.83   | 26.82      | 751.0     | 215.0 | -1.36 | 0.914   | 0.197 | small     |
| Type.two.sided.1         | non-gamified            | 20 | 4.00   | 21.25      | 425.0     | 215.0 | -1.36 | 0.176   | 0.197 | small     |
| Type.two.sided.2         | ont-gamified            | 28 | 4.83   | 26.82      | 751.0     | 215.0 | -1.36 | 0.176   | 0.197 | small     |
| Type:CLRole.less.1       | non-gamified.Apprentice | 10 | 4.75   | 12.55      | 125.5     | 70.5  | 1.56  | 0.942   | 0.349 | medium    |
| Type:CLRole.less.2       | non-gamified.Master     | 10 | 3.83   | 8.45       | 84.5      | 70.5  | 1.56  | 0.942   | 0.349 | medium    |
| Type:CLRole.greater.1    | non-gamified.Apprentice | 10 | 4.75   | 12.55      | 125.5     | 70.5  | 1.56  | 0.063   | 0.349 | medium    |
| Type:CLRole.greater.2    | non-gamified.Master     | 10 | 3.83   | 8.45       | 84.5      | 70.5  | 1.56  | 0.063   | 0.349 | medium    |
| Type:CLRole.two.sided.1  | non-gamified.Apprentice | 10 | 4.75   | 12.55      | 125.5     | 70.5  | 1.56  | 0.126   | 0.349 | medium    |
| Type:CLRole.two.sided.2  | non-gamified.Master     | 10 | 3.83   | 8.45       | 84.5      | 70.5  | 1.56  | 0.126   | 0.349 | medium    |
| Type:CLRole.less.11      | non-gamified.Apprentice | 10 | 4.75   | 12.50      | 125.0     | 70.0  | 0.00  | 0.506   | 0.000 | none      |
| Type:CLRole.less.21      | ont-gamified.Apprentice | 14 | 4.75   | 12.50      | 175.0     | 70.0  | 0.00  | 0.506   | 0.000 | none      |
| Type:CLRole.greater.11   | non-gamified.Apprentice | 10 | 4.75   | 12.50      | 125.0     | 70.0  | 0.00  | 0.506   | 0.000 | none      |
| Type:CLRole.greater.21   | ont-gamified.Apprentice | 14 | 4.75   | 12.50      | 175.0     | 70.0  | 0.00  | 0.506   | 0.000 | none      |
| Type:CLRole.two.sided.11 | non-gamified.Apprentice | 10 | 4.75   | 12.50      | 125.0     | 70.0  | 0.00  | 1.000   | 0.000 | none      |
| Type:CLRole.two.sided.21 | ont-gamified.Apprentice | 14 | 4.75   | 12.50      | 175.0     | 70.0  | 0.00  | 1.000   | 0.000 | none      |
| Type:CLRole.less.12      | non-gamified.Apprentice | 10 | 4.75   | 11.80      | 118.0     | 63.0  | -0.41 | 0.348   | 0.084 | none      |
| Type:CLRole.less.22      | ont-gamified.Master     | 14 | 5.17   | 13.00      | 182.0     | 63.0  | -0.41 | 0.348   | 0.084 | none      |
| Type:CLRole.greater.12   | non-gamified.Apprentice | 10 | 4.75   | 11.80      | 118.0     | 63.0  | -0.41 | 0.663   | 0.084 | none      |
| Type:CLRole.greater.22   | ont-gamified.Master     | 14 | 5.17   | 13.00      | 182.0     | 63.0  | -0.41 | 0.663   | 0.084 | none      |
| Type:CLRole.two.sided.12 | non-gamified.Apprentice | 10 | 4.75   | 11.80      | 118.0     | 63.0  | -0.41 | 0.695   | 0.084 | none      |
| Type:CLRole.two.sided.22 | ont-gamified.Master     | 14 | 5.17   | 13.00      | 182.0     | 63.0  | -0.41 | 0.695   | 0.084 | none      |
| Type:CLRole.less.13      | non-gamified.Master     | 10 | 3.83   | 10.00      | 100.0     | 45.0  | -1.47 | 0.074   | 0.299 | small     |
| Type:CLRole.less.23      | ont-gamified.Apprentice | 14 | 4.75   | 14.29      | 200.0     | 45.0  | -1.47 | 0.074   | 0.299 | small     |
| Type:CLRole.greater.13   | non-gamified.Master     | 10 | 3.83   | 10.00      | 100.0     | 45.0  | -1.47 | 0.930   | 0.299 | small     |
| Type:CLRole.greater.23   | ont-gamified.Apprentice | 14 | 4.75   | 14.29      | 200.0     | 45.0  | -1.47 | 0.930   | 0.299 | small     |
| Type:CLRole.two.sided.13 | non-gamified.Master     | 10 | 3.83   | 10.00      | 100.0     | 45.0  | -1.47 | 0.149   | 0.299 | small     |
| Type:CLRole.two.sided.23 | ont-gamified.Apprentice | 14 | 4.75   | 14.29      | 200.0     | 45.0  | -1.47 | 0.149   | 0.299 | small     |
| Type:CLRole.less.14      | non-gamified.Master     | 10 | 3.83   | 9.20       | 92.0      | 37.0  | -1.94 | 0.026   | 0.396 | medium    |
| Type:CLRole.less.24      | ont-gamified.Master     | 14 | 5.17   | 14.86      | 208.0     | 37.0  | -1.94 | 0.026   | 0.396 | medium    |
| Type:CLRole.greater.14   | non-gamified.Master     | 10 | 3.83   | 9.20       | 92.0      | 37.0  | -1.94 | 0.975   | 0.396 | medium    |
| Type:CLRole.greater.24   | ont-gamified.Master     | 14 | 5.17   | 14.86      | 208.0     | 37.0  | -1.94 | 0.975   | 0.396 | medium    |
| Type:CLRole.two.sided.14 | non-gamified.Master     | 10 | 3.83   | 9.20       | 92.0      | 37.0  | -1.94 | 0.053   | 0.396 | medium    |
| Type:CLRole.two.sided.24 | ont-gamified.Master     | 14 | 5.17   | 14.86      | 208.0     | 37.0  | -1.94 | 0.053   | 0.396 | medium    |
| Type:CLRole.less.15      | ont-gamified.Apprentice | 14 | 4.75   | 13.50      | 189.0     | 84.0  | -0.65 | 0.266   | 0.122 | small     |
| Type:CLRole.less.25      | ont-gamified.Master     | 14 | 5.17   | 15.50      | 217.0     | 84.0  | -0.65 | 0.266   | 0.122 | small     |
| Type:CLRole.greater.15   | ont-gamified.Apprentice | 14 | 4.75   | 13.50      | 189.0     | 84.0  | -0.65 | 0.741   | 0.122 | small     |
| Type:CLRole.greater.25   | ont-gamified.Master     | 14 | 5.17   | 15.50      | 217.0     | 84.0  | -0.65 | 0.741   | 0.122 | small     |

Table 3: *(continued)*

|                          | Group                   | N  | Median | Mean.Ranks | Sum.Ranks | U    | Z     | p.value | r     | magnitude |
|--------------------------|-------------------------|----|--------|------------|-----------|------|-------|---------|-------|-----------|
| Type:CLRole.two.sided.15 | ont-gamified.Apprentice | 14 | 4.75   | 13.50      | 189.0     | 84.0 | -0.65 | 0.532   | 0.122 | small     |
| Type:CLRole.two.sided.25 | ont-gamified.Master     | 14 | 5.17   | 15.50      | 217.0     | 84.0 | -0.65 | 0.532   | 0.122 | small     |