# Summary of nonparametric statistics analysis for Differences of Scores in the first study for students with effective participation

Table 1: Summary of Scheirer-Ray-Hare results for Differences of Scores in the first study for students with effective participation

|  | Df | Sum Sq | H | p.value | Sig |
|---|---|---|---|---|---|
| difScore |  |  |  |  |  |
| difScore:Type | 1 | 1.789 | 0.010 | 0.922 |  |
| difScore:CLRole | 1 | 2531.806 | 13.469 | 0.000 | ** |
| difScore:Type:CLRole | 1 | 286.291 | 1.523 | 0.217 |  |
| difScore:Residuals | 43 | 5827.114 |  |  |  |

Signif. codes: 0 "**" 0.01 "*" 0.05

Table 2: Descriptive statistic of the pair wilcoxon analysis for Differences of Scores in the first study for students with effective participation

|  | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|---|---|---|---|---|---|---|---|---|---|---|
| Type:CLRole.greater.1 | non-gamified.Apprentice | 10 | 1.66 | 16.15 | 161.5 | 106.5 | 2.14 | 0.016 | 0.436 | medium |
| Type:CLRole.greater.2 | ont-gamified.Master | 14 | 0.30 | 9.89 | 138.5 | 106.5 | 2.14 | 0.016 | 0.436 | medium |
| Type:CLRole.two.sided.1 | non-gamified.Apprentice | 10 | 1.66 | 16.15 | 161.5 | 106.5 | 2.14 | 0.032 | 0.436 | medium |
| Type:CLRole.two.sided.2 | ont-gamified.Master | 14 | 0.30 | 9.89 | 138.5 | 106.5 | 2.14 | 0.032 | 0.436 | medium |
| Type:CLRole.less.1 | non-gamified.Master | 9 | 0.66 | 7.67 | 69.0 | 24.0 | −2.46 | 0.006 | 0.512 | large |
| Type:CLRole.less.2 | ont-gamified.Apprentice | 14 | 2.72 | 14.79 | 207.0 | 24.0 | −2.46 | 0.006 | 0.512 | large |
| Type:CLRole.two.sided.11 | non-gamified.Master | 9 | 0.66 | 7.67 | 69.0 | 24.0 | −2.46 | 0.013 | 0.512 | large |
| Type:CLRole.two.sided.21 | ont-gamified.Apprentice | 14 | 2.72 | 14.79 | 207.0 | 24.0 | −2.46 | 0.013 | 0.512 | large |
| Type:CLRole.greater.11 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.greater.21 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.two.sided.12 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.two.sided.22 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |

Table 3: Full descriptive statistic of the pair wilcoxon analysis for Differences of Scores 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 | 19 | 1.13 | 24.24 | 460.5 | 270.5 | 0.10 | 0.541 | 0.014 | none |
| Type.less.2 | ont-gamified | 28 | 1.33 | 23.84 | 667.5 | 270.5 | 0.10 | 0.541 | 0.014 | none |
| Type.greater.1 | non-gamified | 19 | 1.13 | 24.24 | 460.5 | 270.5 | 0.10 | 0.464 | 0.014 | none |
| Type.greater.2 | ont-gamified | 28 | 1.33 | 23.84 | 667.5 | 270.5 | 0.10 | 0.464 | 0.014 | none |
| Type.two.sided.1 | non-gamified | 19 | 1.13 | 24.24 | 460.5 | 270.5 | 0.10 | 0.927 | 0.014 | none |
| Type.two.sided.2 | ont-gamified | 28 | 1.33 | 23.84 | 667.5 | 270.5 | 0.10 | 0.927 | 0.014 | none |
| Type:CLRole.less.1 | non-gamified.Apprentice | 10 | 1.66 | 11.70 | 117.0 | 62.0 | 1.39 | 0.922 | 0.318 | medium |
| Type:CLRole.less.2 | non-gamified.Master | 9 | 0.66 | 8.11 | 73.0 | 62.0 | 1.39 | 0.922 | 0.318 | medium |
| Type:CLRole.greater.1 | non-gamified.Apprentice | 10 | 1.66 | 11.70 | 117.0 | 62.0 | 1.39 | 0.091 | 0.318 | medium |
| Type:CLRole.greater.2 | non-gamified.Master | 9 | 0.66 | 8.11 | 73.0 | 62.0 | 1.39 | 0.091 | 0.318 | medium |
| Type:CLRole.two.sided.1 | non-gamified.Apprentice | 10 | 1.66 | 11.70 | 117.0 | 62.0 | 1.39 | 0.182 | 0.318 | medium |
| Type:CLRole.two.sided.2 | non-gamified.Master | 9 | 0.66 | 8.11 | 73.0 | 62.0 | 1.39 | 0.182 | 0.318 | medium |
| Type:CLRole.less.11 | non-gamified.Apprentice | 10 | 1.66 | 11.50 | 115.0 | 60.0 | −0.59 | 0.292 | 0.120 | small |
| Type:CLRole.less.21 | ont-gamified.Apprentice | 14 | 2.72 | 13.21 | 185.0 | 60.0 | −0.59 | 0.292 | 0.120 | small |
| Type:CLRole.greater.11 | non-gamified.Apprentice | 10 | 1.66 | 11.50 | 115.0 | 60.0 | −0.59 | 0.727 | 0.120 | small |
| Type:CLRole.greater.21 | ont-gamified.Apprentice | 14 | 2.72 | 13.21 | 185.0 | 60.0 | −0.59 | 0.727 | 0.120 | small |
| Type:CLRole.two.sided.11 | non-gamified.Apprentice | 10 | 1.66 | 11.50 | 115.0 | 60.0 | −0.59 | 0.585 | 0.120 | small |
| Type:CLRole.two.sided.21 | ont-gamified.Apprentice | 14 | 2.72 | 13.21 | 185.0 | 60.0 | −0.59 | 0.585 | 0.120 | small |
| Type:CLRole.less.12 | non-gamified.Apprentice | 10 | 1.66 | 16.15 | 161.5 | 106.5 | 2.14 | 0.985 | 0.436 | medium |
| Type:CLRole.less.22 | ont-gamified.Master | 14 | 0.30 | 9.89 | 138.5 | 106.5 | 2.14 | 0.985 | 0.436 | medium |
| Type:CLRole.greater.12 | non-gamified.Apprentice | 10 | 1.66 | 16.15 | 161.5 | 106.5 | 2.14 | 0.016 | 0.436 | medium |
| Type:CLRole.greater.22 | ont-gamified.Master | 14 | 0.30 | 9.89 | 138.5 | 106.5 | 2.14 | 0.016 | 0.436 | medium |
| Type:CLRole.two.sided.12 | non-gamified.Apprentice | 10 | 1.66 | 16.15 | 161.5 | 106.5 | 2.14 | 0.032 | 0.436 | medium |
| Type:CLRole.two.sided.22 | ont-gamified.Master | 14 | 0.30 | 9.89 | 138.5 | 106.5 | 2.14 | 0.032 | 0.436 | medium |
| Type:CLRole.less.13 | non-gamified.Master | 9 | 0.66 | 7.67 | 69.0 | 24.0 | −2.46 | 0.006 | 0.512 | large |
| Type:CLRole.less.23 | ont-gamified.Apprentice | 14 | 2.72 | 14.79 | 207.0 | 24.0 | −2.46 | 0.006 | 0.512 | large |
| Type:CLRole.greater.13 | non-gamified.Master | 9 | 0.66 | 7.67 | 69.0 | 24.0 | −2.46 | 0.995 | 0.512 | large |
| Type:CLRole.greater.23 | ont-gamified.Apprentice | 14 | 2.72 | 14.79 | 207.0 | 24.0 | −2.46 | 0.995 | 0.512 | large |
| Type:CLRole.two.sided.13 | non-gamified.Master | 9 | 0.66 | 7.67 | 69.0 | 24.0 | −2.46 | 0.013 | 0.512 | large |
| Type:CLRole.two.sided.23 | ont-gamified.Apprentice | 14 | 2.72 | 14.79 | 207.0 | 24.0 | −2.46 | 0.013 | 0.512 | large |
| Type:CLRole.less.14 | non-gamified.Master | 9 | 0.66 | 13.89 | 125.0 | 80.0 | 1.07 | 0.859 | 0.223 | small |
| Type:CLRole.less.24 | ont-gamified.Master | 14 | 0.30 | 10.79 | 151.0 | 80.0 | 1.07 | 0.859 | 0.223 | small |
| Type:CLRole.greater.14 | non-gamified.Master | 9 | 0.66 | 13.89 | 125.0 | 80.0 | 1.07 | 0.149 | 0.223 | small |
| Type:CLRole.greater.24 | ont-gamified.Master | 14 | 0.30 | 10.79 | 151.0 | 80.0 | 1.07 | 0.149 | 0.223 | small |
| Type:CLRole.two.sided.14 | non-gamified.Master | 9 | 0.66 | 13.89 | 125.0 | 80.0 | 1.07 | 0.298 | 0.223 | small |
| Type:CLRole.two.sided.24 | ont-gamified.Master | 14 | 0.30 | 10.79 | 151.0 | 80.0 | 1.07 | 0.298 | 0.223 | small |
| Type:CLRole.less.15 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 1.000 | 0.695 | large |
| Type:CLRole.less.25 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 1.000 | 0.695 | large |
| Type:CLRole.greater.15 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.greater.25 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |

| | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|---|---|---|---|---|---|---|---|---|---|---|
| Type:CLRole.two.sided.15 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.two.sided.25 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |

| | Group | N | Median | Mean.Ranks | Sum.Ranks | U | Z | p.value | r | magnitude |
|---|---|---|---|---|---|---|---|---|---|---|
| Type:CLRole.two.sided.15 | ont-gamified.Apprentice | 14 | 2.72 | 20.21 | 283.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |
| Type:CLRole.two.sided.25 | ont-gamified.Master | 14 | 0.30 | 8.79 | 123.0 | 178.0 | 3.68 | 0.000 | 0.695 | large |