## Summary of nonparametric statistics analysis for Intrinsic Motivation score in the pilot study for students with effective participation

Table 1: Summary of Scheirer-Ray-Hare results for Intrinsic Motivation score in the pilot study for students with effective participation

|                  | Df | Sum Sq  | Н     | p.value | Sig |
|------------------|----|---------|-------|---------|-----|
| Type             |    |         |       |         |     |
| Type:Type        | 1  | 133.929 | 3.479 | 0.062   |     |
| Type:CLRole      | 1  | 2.100   | 0.055 | 0.815   |     |
| Type:Type:CLRole | 1  | 36.021  | 0.936 | 0.333   |     |
| Type:Residuals   | 17 | 597.950 |       |         |     |

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

Table 2: Descriptive statistic of the pair wilcoxon analysis for Intrinsic Motivation score in the pilot study for students with effective participation

|             | Group        | N  | Median | Mean.Ranks | Sum.Ranks | U       | Z     | p.value | r     | magnitude |
|-------------|--------------|----|--------|------------|-----------|---------|-------|---------|-------|-----------|
| Type.less.1 | non-gamified | 7  | 4.45   | 7.43       | 52        | 24      | -1.87 | 0.033   | 0.407 | medium    |
| Type.less.2 | ont-gamified | 14 | 4.94   | 12.79      | 179       | $^{24}$ | -1.87 | 0.033   | 0.407 | medium    |

Table 3: Full descriptive statistic of the pair wilcoxon analysis for Intrinsic Motivation score in the pilot study for students with effective participation

|                          | Group                   | N  | Median | Mean.Ranks | Sum.Ranks | U       | Z     | p.value | r     | magnitude              |
|--------------------------|-------------------------|----|--------|------------|-----------|---------|-------|---------|-------|------------------------|
| Type.less.1              | non-gamified            | 7  | 4.45   | 7.43       | 52        | 24      | -1.87 | 0.033   | 0.407 | medium                 |
| Type.less.2              | ont-gamified            | 14 | 4.94   | 12.79      | 179       | 24      | -1.87 | 0.033   | 0.407 | medium                 |
| Type.greater.1           | non-gamified            | 7  | 4.45   | 7.43       | 52        | 24      | -1.87 | 0.972   | 0.407 | medium                 |
| Type.greater.2           | ont-gamified            | 14 | 4.94   | 12.79      | 179       | 24      | -1.87 | 0.972   | 0.407 | medium                 |
| Type.two.sided.1         | non-gamified            | 7  | 4.45   | 7.43       | 52        | $^{24}$ | -1.87 | 0.067   | 0.407 | medium                 |
| Type.two.sided.2         | ont-gamified            | 14 | 4.94   | 12.79      | 179       | 24      | -1.87 | 0.067   | 0.407 | medium                 |
| Type:CLRole.less.1       | non-gamified.Apprentice | 5  | 4.57   | 4.60       | 23        | 8       | 1.16  | 0.905   | 0.439 | medium                 |
| Type:CLRole.less.2       | non-gamified.Master     | 2  | 3.99   | 2.50       | 5         | 8       | 1.16  | 0.905   | 0.439 | medium                 |
| Type:CLRole.greater.1    | non-gamified.Apprentice | 5  | 4.57   | 4.60       | 23        | 8       | 1.16  | 0.190   | 0.439 | medium                 |
| Type:CLRole.greater.2    | non-gamified.Master     | 2  | 3.99   | 2.50       | 5         | 8       | 1.16  | 0.190   | 0.439 | medium                 |
| Type:CLRole.two.sided.1  | non-gamified.Apprentice | 5  | 4.57   | 4.60       | 23        | 8       | 1.16  | 0.381   | 0.439 | medium                 |
| Type:CLRole.two.sided.2  | non-gamified.Master     | 2  | 3.99   | 2.50       | 5         | 8       | 1.16  | 0.381   | 0.439 | medium                 |
| Type:CLRole.less.11      | non-gamified.Apprentice | 5  | 4.57   | 6.20       | 31        | 16      | -1.10 | 0.155   | 0.285 | $\operatorname{small}$ |
| Type:CLRole.less.21      | ont-gamified.Apprentice | 10 | 4.94   | 8.90       | 89        | 16      | -1.10 | 0.155   | 0.285 | $\operatorname{small}$ |
| Type:CLRole.greater.11   | non-gamified.Apprentice | 5  | 4.57   | 6.20       | 31        | 16      | -1.10 | 0.873   | 0.285 | small                  |
| Type:CLRole.greater.21   | ont-gamified.Apprentice | 10 | 4.94   | 8.90       | 89        | 16      | -1.10 | 0.873   | 0.285 | $\operatorname{small}$ |
| Type:CLRole.two.sided.11 | non-gamified.Apprentice | 5  | 4.57   | 6.20       | 31        | 16      | -1.10 | 0.310   | 0.285 | small                  |
| Type:CLRole.two.sided.21 | ont-gamified.Apprentice | 10 | 4.94   | 8.90       | 89        | 16      | -1.10 | 0.310   | 0.285 | $\operatorname{small}$ |
| Type:CLRole.less.12      | non-gamified.Apprentice | 5  | 4.57   | 4.00       | 20        | 5       | -1.22 | 0.143   | 0.408 | medium                 |
| Type:CLRole.less.22      | ont-gamified.Master     | 4  | 5.12   | 6.25       | 25        | 5       | -1.22 | 0.143   | 0.408 | medium                 |
| Type:CLRole.greater.12   | non-gamified.Apprentice | 5  | 4.57   | 4.00       | 20        | 5       | -1.22 | 0.905   | 0.408 | medium                 |
| Type:CLRole.greater.22   | ont-gamified.Master     | 4  | 5.12   | 6.25       | 25        | 5       | -1.22 | 0.905   | 0.408 | medium                 |
| Type:CLRole.two.sided.12 | non-gamified.Apprentice | 5  | 4.57   | 4.00       | 20        | 5       | -1.22 | 0.286   | 0.408 | medium                 |
| Type:CLRole.two.sided.22 | ont-gamified.Master     | 4  | 5.12   | 6.25       | 25        | 5       | -1.22 | 0.286   | 0.408 | medium                 |
| Type:CLRole.less.13      | non-gamified.Master     | 2  | 3.99   | 3.00       | 6         | 3       | -1.50 | 0.091   | 0.434 | medium                 |
| Type:CLRole.less.23      | ont-gamified.Apprentice | 10 | 4.94   | 7.20       | 72        | 3       | -1.50 | 0.091   | 0.434 | medium                 |
| Type:CLRole.greater.13   | non-gamified.Master     | 2  | 3.99   | 3.00       | 6         | 3       | -1.50 | 0.939   | 0.434 | medium                 |
| Type:CLRole.greater.23   | ont-gamified.Apprentice | 10 | 4.94   | 7.20       | 72        | 3       | -1.50 | 0.939   | 0.434 | medium                 |
| Type:CLRole.two.sided.13 | non-gamified.Master     | 2  | 3.99   | 3.00       | 6         | 3       | -1.50 | 0.182   | 0.434 | medium                 |
| Type:CLRole.two.sided.23 | ont-gamified.Apprentice | 10 | 4.94   | 7.20       | 72        | 3       | -1.50 | 0.182   | 0.434 | medium                 |
| Type:CLRole.less.14      | non-gamified.Master     | 2  | 3.99   | 1.50       | 3         | 0       | -1.85 | 0.067   | 0.756 | large                  |
| Type:CLRole.less.24      | ont-gamified.Master     | 4  | 5.12   | 4.50       | 18        | 0       | -1.85 | 0.067   | 0.756 | large                  |
| Type:CLRole.greater.14   | non-gamified.Master     | 2  | 3.99   | 1.50       | 3         | 0       | -1.85 | 1.000   | 0.756 | large                  |
| Type:CLRole.greater.24   | ont-gamified.Master     | 4  | 5.12   | 4.50       | 18        | 0       | -1.85 | 1.000   | 0.756 | large                  |
| Type:CLRole.two.sided.14 | non-gamified.Master     | 2  | 3.99   | 1.50       | 3         | 0       | -1.85 | 0.133   | 0.756 | large                  |
| Type:CLRole.two.sided.24 | ont-gamified.Master     | 4  | 5.12   | 4.50       | 18        | 0       | -1.85 | 0.133   | 0.756 | large                  |
| Type:CLRole.less.15      | ont-gamified.Apprentice | 10 | 4.94   | 7.30       | 73        | 18      | -0.28 | 0.420   | 0.076 | none                   |
| Type:CLRole.less.25      | ont-gamified.Master     | 4  | 5.12   | 8.00       | 32        | 18      | -0.28 | 0.420   | 0.076 | none                   |
| Type:CLRole.greater.15   | ont-gamified.Apprentice | 10 | 4.94   | 7.30       | 73        | 18      | -0.28 | 0.633   | 0.076 | none                   |
| Type:CLRole.greater.25   | ont-gamified.Master     | 4  | 5.12   | 8.00       | 32        | 18      | -0.28 | 0.633   | 0.076 | none                   |

## Table 3: (continued)

|                          | Group                   | N  | Median | Mean.Ranks | Sum.Ranks | U  | Z     | p.value | r     | magnitude |
|--------------------------|-------------------------|----|--------|------------|-----------|----|-------|---------|-------|-----------|
| Type:CLRole.two.sided.15 | ont-gamified.Apprentice | 10 | 4.94   | 7.30       | 73        | 18 | -0.28 | 0.839   | 0.076 | none      |
| Type:CLRole.two.sided.25 | ont-gamified.Master     | 4  | 5.12   | 8.00       | 32        | 18 | -0.28 | 0.839   | 0.076 | none      |