

# Statistical Analysis in the first study for students with effective participation

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Table 1: Two-way ANOVA and Scheirer-Ray-Hare in the first study for students with effective participation

	Sum Sq	Df	F value	Pr(>F)	Sig	Df	Sum Sq	H	p.value	Sig
Interest/Enjoyment.(Intercept)	0.001	1	0.001	0.972						
Interest/Enjoyment.Type	0.646	1	0.662	0.420		1	362.143	1.860	0.173	
Interest/Enjoyment.CLRole	0.047	1	0.048	0.827		1	50.021	0.257	0.612	
Interest/Enjoyment.Type:CLRole	2.293	1	2.353	0.133		1	439.215	2.256	0.133	
Interest/Enjoyment.Residuals	40.933	42				44	8300.621			
Perceived Choice.(Intercept)	0.076	1	0.093	0.762						
Perceived Choice.Type	2.243	1	2.721	0.106		1	420.000	2.153	0.142	
Perceived Choice.CLRole	0.014	1	0.017	0.898		1	0.187	0.001	0.975	
Perceived Choice.Type:CLRole	0.035	1	0.043	0.837		1	22.634	0.116	0.733	
Perceived Choice.Residuals	36.279	44				44	8726.179			
Pressure/Tension.(Intercept)	4.208	1	3.974	0.052						
Pressure/Tension.Type	1.526	1	1.441	0.236		1	197.486	1.069	0.301	
Pressure/Tension.CLRole	0.114	1	0.108	0.744		1	114.083	0.618	0.432	
Pressure/Tension.Type:CLRole	6.352	1	5.999	0.018	*	1	1034.002	5.599	0.018	*
Pressure/Tension.Residuals	46.594	44				44	7333.929			
Effort/Importance.(Intercept)	0.030	1	0.033	0.856						
Effort/Importance.Type	2.842	1	3.121	0.084		1	438.193	2.263	0.132	
Effort/Importance.CLRole	4.911	1	5.393	0.025	*	1	623.521	3.221	0.073	
Effort/Importance.Type:CLRole	1.527	1	1.677	0.202		1	312.872	1.616	0.204	
Effort/Importance.Residuals	40.063	44				44	7724.414			
Intrinsic Motivation.(Intercept)	0.143	1	0.390	0.535						
Intrinsic Motivation.Type	1.536	1	4.188	0.047	*	1	619.286	3.160	0.075	
Intrinsic Motivation.CLRole	0.535	1	1.460	0.233		1	234.083	1.194	0.274	
Intrinsic Motivation.Type:CLRole	0.097	1	0.265	0.610		1	44.688	0.228	0.633	
Intrinsic Motivation.Residuals	16.141	44				44	8313.943			

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

Table 2: Summary of Tukey post-hoc in the first study for students with effective participation

	N	mean	lsmean	SE	df	lwr.CI	upr.CI	t.ratio	p.value	p.adj	g	sig	mag
Intrinsic Motivation:non-gamified - ont-gamified	48	-0.363	-0.363	0.177		-0.72	-0.006	-2.046	0.047	0.047	-0.592	*	medium

Table 3: Summary of Pair wilcoxon in the first study for students with effective participation

	Group	N	Median	Mean.Ranks	Sum.Ranks	U	Z	p.value	r	magnitude
Interest/Enjoyment.Type:CLRole.less.1	non-gamified.Master	10	-0.94	9.20	92.0	37.0	-1.94	0.026	0.396	medium
Interest/Enjoyment.Type:CLRole.less.2	ont-gamified.Master	14	0.34	14.86	208.0	37.0	-1.94	0.026	0.396	medium
Pressure/Tension.Type:CLRole.greater.1	non-gamified.Apprentice	10	0.81	16.15	161.5	106.5	2.29	0.011	0.467	medium
Pressure/Tension.Type:CLRole.greater.2	ont-gamified.Apprentice	14	-0.91	9.89	138.5	106.5	2.29	0.011	0.467	medium
Pressure/Tension.Type:CLRole.two.sided.1	non-gamified.Apprentice	10	0.81	16.15	161.5	106.5	2.29	0.021	0.467	medium
Pressure/Tension.Type:CLRole.two.sided.2	ont-gamified.Apprentice	14	-0.91	9.89	138.5	106.5	2.29	0.021	0.467	medium
Pressure/Tension.Type:CLRole.less.1	ont-gamified.Apprentice	14	-0.91	11.29	158.0	53.0	-2.18	0.014	0.413	medium
Pressure/Tension.Type:CLRole.less.2	ont-gamified.Master	14	0.82	17.71	248.0	53.0	-2.18	0.014	0.413	medium
Pressure/Tension.Type:CLRole.two.sided.11	ont-gamified.Apprentice	14	-0.91	11.29	158.0	53.0	-2.18	0.027	0.413	medium
Pressure/Tension.Type:CLRole.two.sided.21	ont-gamified.Master	14	0.82	17.71	248.0	53.0	-2.18	0.027	0.413	medium
Effort/Importance.Type:CLRole.greater.1	non-gamified.Apprentice	10	0.07	13.30	133.0	78.0	2.13	0.017	0.476	medium
Effort/Importance.Type:CLRole.greater.2	non-gamified.Master	10	-0.94	7.70	77.0	78.0	2.13	0.017	0.476	medium
Effort/Importance.Type:CLRole.two.sided.1	non-gamified.Apprentice	10	0.07	13.30	133.0	78.0	2.13	0.035	0.476	medium
Effort/Importance.Type:CLRole.two.sided.2	non-gamified.Master	10	-0.94	7.70	77.0	78.0	2.13	0.035	0.476	medium
Effort/Importance.Type:CLRole.less.1	non-gamified.Master	10	-0.94	8.40	84.0	29.0	-2.42	0.007	0.493	medium
Effort/Importance.Type:CLRole.less.2	ont-gamified.Apprentice	14	0.21	15.43	216.0	29.0	-2.42	0.007	0.493	medium
Effort/Importance.Type:CLRole.two.sided.11	non-gamified.Master	10	-0.94	8.40	84.0	29.0	-2.42	0.014	0.493	medium
Effort/Importance.Type:CLRole.two.sided.21	ont-gamified.Apprentice	14	0.21	15.43	216.0	29.0	-2.42	0.014	0.493	medium
Effort/Importance.Type:CLRole.less.11	non-gamified.Master	10	-0.94	9.20	92.0	37.0	-1.94	0.026	0.396	medium
Effort/Importance.Type:CLRole.less.21	ont-gamified.Master	14	0.21	14.86	208.0	37.0	-1.94	0.026	0.396	medium
Intrinsic Motivation.Type.less.1	non-gamified	20	-0.28	20.25	405.0	195.0	-1.78	0.039	0.257	small
Intrinsic Motivation.Type.less.2	ont-gamified	28	0.00	27.54	771.0	195.0	-1.78	0.039	0.257	small
Intrinsic Motivation.Type:CLRole.less.1	non-gamified.Master	10	-0.47	9.00	90.0	35.0	-2.05	0.021	0.418	medium
Intrinsic Motivation.Type:CLRole.less.2	ont-gamified.Apprentice	14	0.30	15.00	210.0	35.0	-2.05	0.021	0.418	medium
Intrinsic Motivation.Type:CLRole.two.sided.1	non-gamified.Master	10	-0.47	9.00	90.0	35.0	-2.05	0.042	0.418	medium
Intrinsic Motivation.Type:CLRole.two.sided.2	ont-gamified.Apprentice	14	0.30	15.00	210.0	35.0	-2.05	0.042	0.418	medium
Intrinsic Motivation.Type:CLRole.less.11	non-gamified.Master	10	-0.47	9.50	95.0	40.0	-1.76	0.042	0.359	medium
Intrinsic Motivation.Type:CLRole.less.21	ont-gamified.Master	14	-0.07	14.64	205.0	40.0	-1.76	0.042	0.359	medium