

Summary of Correlation Analysis

July 17, 2018

1 Gains in Skill/Knowledge and Motivation

Table 1: Correlation matrix of Gains in Skill/Knowledge and Motivation between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.0160	-0.1688	-0.1010	-0.0342	0.1882
Intrinsic Motivation	-0.0160	1.0000	0.7575	0.6856	-0.4746	0.3150
Interest/Enjoyment	-0.1688	0.7575	1.0000	0.4622	-0.2527	0.1101
Perceived Choice	-0.1010	0.6856	0.4622	1.0000	-0.1757	0.0138
Pressure/Tension	-0.0342	-0.4746	-0.2527	-0.1757	1.0000	0.2684
Effort/Importance	0.1882	0.3150	0.1101	0.0138	0.2684	1.0000
method: spearman						

Table 2: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.9179	0.2734	0.5140	0.8254	0.2212
Intrinsic Motivation	0.9179	0.0000	0.0000	0.0000	0.0011	0.0373
Interest/Enjoyment	0.2734	0.0000	0.0000	0.0016	0.0979	0.4768
Perceived Choice	0.5140	0.0000	0.0016	0.0000	0.2539	0.9290
Pressure/Tension	0.8254	0.0011	0.0979	0.2539	0.0000	0.0781
Effort/Importance	0.2212	0.0373	0.4768	0.9290	0.0781	0.0000
method: spearman						

2 Gains in Skill/Knowledge and Motivation for the group non-gamified

Table 3: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	0.2962	0.1404	0.1912	0.0052	0.4230
Intrinsic Motivation	0.2962	1.0000	0.7333	0.8186	-0.4635	0.3110
Interest/Enjoyment	0.1404	0.7333	1.0000	0.4807	-0.1594	0.2560
Perceived Choice	0.1912	0.8186	0.4807	1.0000	-0.6142	0.0254
Pressure/Tension	0.0052	-0.4635	-0.1594	-0.6142	1.0000	0.5172
Effort/Importance	0.4230	0.3110	0.2560	0.0254	0.5172	1.0000
method: spearman						

Table 4: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.2320	0.5784	0.4472	0.9837	0.0803
Intrinsic Motivation	0.2320	0.0000	0.0005	0.0000	0.0527	0.2090
Interest/Enjoyment	0.5784	0.0005	0.0000	0.0434	0.5277	0.3052
Perceived Choice	0.4472	0.0000	0.0434	0.0000	0.0067	0.9202
Pressure/Tension	0.9837	0.0527	0.5277	0.0067	0.0000	0.0279
Effort/Importance	0.0803	0.2090	0.3052	0.9202	0.0279	0.0000
method: spearman						

3 Gains in Skill/Knowledge and Motivation for the group ont-gamified

Table 5: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.1621	-0.3131	-0.2139	-0.0644	0.0658
Intrinsic Motivation	-0.1621	1.0000	0.7294	0.5215	-0.5086	0.3399
Interest/Enjoyment	-0.3131	0.7294	1.0000	0.3776	-0.3877	-0.0121
Perceived Choice	-0.2139	0.5215	0.3776	1.0000	0.0817	-0.0936
Pressure/Tension	-0.0644	-0.5086	-0.3877	0.0817	1.0000	0.1384
Effort/Importance	0.0658	0.3399	-0.0121	-0.0936	0.1384	1.0000
method: spearman						

Table 6: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.4288	0.1193	0.2942	0.7546	0.7493
Intrinsic Motivation	0.4288	0.0000	0.0000	0.0063	0.0080	0.0894
Interest/Enjoyment	0.1193	0.0000	0.0000	0.0572	0.0503	0.9531
Perceived Choice	0.2942	0.0063	0.0572	0.0000	0.6915	0.6493
Pressure/Tension	0.7546	0.0080	0.0503	0.6915	0.0000	0.5001
Effort/Importance	0.7493	0.0894	0.9531	0.6493	0.5001	0.0000

method: spearman

4 Gains in Skill/Knowledge and Motivation for the group Apprentice

Table 7: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Apprentices between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.0966	-0.0028	-0.1809	-0.0805	0.2699
Intrinsic Motivation	-0.0966	1.0000	0.8146	0.7724	-0.4195	0.2977
Interest/Enjoyment	-0.0028	0.8146	1.0000	0.6442	-0.1451	0.1175
Perceived Choice	-0.1809	0.7724	0.6442	1.0000	-0.2301	-0.0205
Pressure/Tension	-0.0805	-0.4195	-0.1451	-0.2301	1.0000	0.0825
Effort/Importance	0.2699	0.2977	0.1175	-0.0205	0.0825	1.0000
method: spearman						

Table 8: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Apprentice between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.6682	0.9900	0.4203	0.7216	0.2245
Intrinsic Motivation	0.6682	0.0000	0.0000	0.0000	0.0520	0.1784
Interest/Enjoyment	0.9900	0.0000	0.0000	0.0012	0.5193	0.6026
Perceived Choice	0.4203	0.0000	0.0012	0.0000	0.3030	0.9279
Pressure/Tension	0.7216	0.0520	0.5193	0.3030	0.0000	0.7151
Effort/Importance	0.2245	0.1784	0.6026	0.9279	0.7151	0.0000
method: spearman						

5 Gains in Skill/Knowledge and Motivation for the group Master

Table 9: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.1469	-0.3459	-0.1628	-0.0560	-0.0465
Intrinsic Motivation	-0.1469	1.0000	0.7674	0.5926	-0.4853	0.3009
Interest/Enjoyment	-0.3459	0.7674	1.0000	0.3066	-0.3686	0.1228
Perceived Choice	-0.1628	0.5926	0.3066	1.0000	-0.0235	0.1647
Pressure/Tension	-0.0560	-0.4853	-0.3686	-0.0235	1.0000	0.4441
Effort/Importance	-0.0465	0.3009	0.1228	0.1647	0.4441	1.0000
method: spearman						

Table 10: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.5142	0.1148	0.4691	0.8044	0.8373
Intrinsic Motivation	0.5142	0.0000	0.0000	0.0037	0.0220	0.1735
Interest/Enjoyment	0.1148	0.0000	0.0000	0.1651	0.0914	0.5863
Perceived Choice	0.4691	0.0037	0.1651	0.0000	0.9174	0.4638
Pressure/Tension	0.8044	0.0220	0.0914	0.9174	0.0000	0.0384
Effort/Importance	0.8373	0.1735	0.5863	0.4638	0.0384	0.0000
method: spearman						

6 Gains in Skill/Knowledge and Motivation for the group non-gamified.Apprentice

Table 11: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified.Apprentice between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	0.2121	0.4970	-0.0671	-0.1223	0.1529
Intrinsic Motivation	0.2121	1.0000	0.8160	0.7500	-0.5627	0.0917
Interest/Enjoyment	0.4970	0.8160	1.0000	0.5432	-0.4768	0.0991
Perceived Choice	-0.0671	0.7500	0.5432	1.0000	-0.6892	-0.2277
Pressure/Tension	-0.1223	-0.5627	-0.4768	-0.6892	1.0000	0.5648
Effort/Importance	0.1529	0.0917	0.0991	-0.2277	0.5648	1.0000
method: spearman						

Table 12: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified. Apprentice between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.5599	0.1439	0.8539	0.7364	0.6732
Intrinsic Motivation	0.5599	0.0000	0.0040	0.0125	0.0904	0.8010
Interest/Enjoyment	0.1439	0.0040	0.0000	0.1046	0.1635	0.7854
Perceived Choice	0.8539	0.0125	0.1046	0.0000	0.0275	0.5269
Pressure/Tension	0.7364	0.0904	0.1635	0.0275	0.0000	0.0889
Effort/Importance	0.6732	0.8010	0.7854	0.5269	0.0889	0.0000
method: spearman						

7 Gains in Skill/Knowledge and Motivation for the group non-gamified.Master

Table 13: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	0.3095	0.0614	0.2857	0.0988	0.7470
Intrinsic Motivation	0.3095	1.0000	0.6874	0.8095	-0.5436	0.6386
Interest/Enjoyment	0.0614	0.6874	1.0000	0.5524	-0.2612	0.4286
Perceived Choice	0.2857	0.8095	0.5524	1.0000	-0.6795	0.3615
Pressure/Tension	0.0988	-0.5436	-0.2612	-0.6795	1.0000	0.1375
Effort/Importance	0.7470	0.6386	0.4286	0.3615	0.1375	1.0000
method: spearman						

Table 14: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.4618	0.8852	0.5008	0.8159	0.0332
Intrinsic Motivation	0.4618	0.0000	0.0596	0.0218	0.1638	0.0883
Interest/Enjoyment	0.8852	0.0596	0.0000	0.1557	0.5321	0.2893
Perceived Choice	0.5008	0.0218	0.1557	0.0000	0.0638	0.3790
Pressure/Tension	0.8159	0.1638	0.5321	0.0638	0.0000	0.7453
Effort/Importance	0.0332	0.0883	0.2893	0.3790	0.7453	0.0000
method: spearman						

8 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice

Table 15: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group on-gamified.Apprentice between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.4545	-0.3328	-0.3761	0.2628	0.2420
Intrinsic Motivation	-0.4545	1.0000	0.7531	0.7346	-0.3003	0.5090
Interest/Enjoyment	-0.3328	0.7531	1.0000	0.7342	-0.1003	0.1587
Perceived Choice	-0.3761	0.7346	0.7342	1.0000	0.1950	0.0734
Pressure/Tension	0.2628	-0.3003	-0.1003	0.1950	1.0000	-0.1146
Effort/Importance	0.2420	0.5090	0.1587	0.0734	-0.1146	1.0000
method: spearman						

Table 16: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.1404	0.2906	0.2282	0.4093	0.4485
Intrinsic Motivation	0.1404	0.0000	0.0047	0.0065	0.3429	0.0910
Interest/Enjoyment	0.2906	0.0047	0.0000	0.0066	0.7565	0.6223
Perceived Choice	0.2282	0.0065	0.0066	0.0000	0.5437	0.8208
Pressure/Tension	0.4093	0.3429	0.7565	0.5437	0.0000	0.7228
Effort/Importance	0.4485	0.0910	0.6223	0.8208	0.7228	0.0000
method: spearman						

9 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master

Table 17: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group out-gamified.Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.1850	-0.1495	-0.2947	-0.0536	-0.2905
Intrinsic Motivation	-0.1850	1.0000	0.7741	0.4007	-0.6496	0.1441
Interest/Enjoyment	-0.1495	0.7741	1.0000	0.0999	-0.7116	-0.0524
Perceived Choice	-0.2947	0.4007	0.0999	1.0000	0.0850	-0.1511
Pressure/Tension	-0.0536	-0.6496	-0.7116	0.0850	1.0000	0.3596
Effort/Importance	-0.2905	0.1441	-0.0524	-0.1511	0.3596	1.0000
method: spearman						

Table 18: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between participants' motivation and learning outcomes in the first empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.5266	0.6100	0.3064	0.8557	0.3137
Intrinsic Motivation	0.5266	0.0000	0.0012	0.1557	0.0119	0.6230
Interest/Enjoyment	0.6100	0.0012	0.0000	0.7340	0.0043	0.8588
Perceived Choice	0.3064	0.1557	0.7340	0.0000	0.7726	0.6061
Pressure/Tension	0.8557	0.0119	0.0043	0.7726	0.0000	0.2067
Effort/Importance	0.3137	0.6230	0.8588	0.6061	0.2067	0.0000
method: spearman						