Summary of correlation analysis between participants' motivation and learning outcomes in the second empirical study

1 Diference in Scores and Motivation

Table 1: Correlation matrix of Diference in Scores and Motivation between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction	
Diference in Scores	1.0000	−0.0080	−0.0390	0.0881		−0.0149
Level of Motivation	−0.0080	1.0000	0.9192	0.8352		0.7030
Attention	−0.0390	0.9192	1.0000	0.6181		0.5231
Relevance	0.0881	0.8352	0.6181	1.0000		0.6094
Satisfaction	−0.0149	0.7030	0.5231	0.6094		1.0000

method: spearman

Table 2: Correlation matrix with p-values of Diference in Scores and Motivation between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction	
Diference in Scores	0.0000	0.9581	0.7969	0.5603		0.9216
Level of Motivation	0.9581	0.0000	0.0000	0.0000		0.0000
Attention	0.7969	0.0000	0.0000	0.0000		0.0002
Relevance	0.5603	0.0000	0.0000	0.0000		0.0000
Satisfaction	0.9216	0.0000	0.0002	0.0000		0.0000

method: spearman

2 Diference in Scores and Motivation for the group non-gamified

Table 3: Correlation matrix of Diference in Scores and Motivation for the group non-gamified between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction	
Diference in Scores	1.0000	0.0999	0.0272	0.2041		0.1559
Level of Motivation	0.0999	1.0000	0.8959	0.8372		0.7405
Attention	0.0272	0.8959	1.0000	0.5686		0.4667
Relevance	0.2041	0.8372	0.5686	1.0000		0.7448
Satisfaction	0.1559	0.7405	0.4667	0.7448		1.0000

method: spearman

Table 4: Correlation matrix with p-values of Diference in Scores and Motivation for the group non-gamified between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction	
Diference in Scores	0.0000	0.62	0.8928	0.3071		0.4376
Level of Motivation	0.6200	0.00	0.0000	0.0000		0.0000
Attention	0.8928	0.00	0.0000	0.0020		0.0141
Relevance	0.3071	0.00	0.0020	0.0000		0.0000
Satisfaction	0.4376	0.00	0.0141	0.0000		0.0000

method: spearman

3 Diference in Scores and Motivation for the group ont-gamified

Table 5: Correlation matrix of Diference in Scores and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction	
Diference in Scores	1.0000	−0.1873	−0.2080	−0.1516		−0.2491
Level of Motivation	−0.1873	1.0000	0.9153	0.8445		0.7619
Attention	−0.2080	0.9153	1.0000	0.6265		0.8205
Relevance	−0.1516	0.8445	0.6265	1.0000		0.4667
Satisfaction	−0.2491	0.7619	0.8205	0.4667		1.0000

method: spearman

Table 6: Correlation matrix with p-values of Diference in Scores and Motivation for the group ont-gamified between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.4425	0.3929	0.5355	0.3037
Level of Motivation	0.4425	0.0000	0.0000	0.0000	0.0002
Attention	0.3929	0.0000	0.0000	0.0041	0.0000
Relevance	0.5355	0.0000	0.0041	0.0000	0.0440
Satisfaction	0.3037	0.0002	0.0000	0.0440	0.0000

method: spearman

4 Diference in Scores and Motivation for the group Apprentice

Table 7: Correlation matrix of Diference in Scores and Motivation for the group Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	−0.0599	−0.1385	0.1033	0.0304
Level of Motivation	−0.0599	1.0000	0.8851	0.8192	0.7060
Attention	−0.1385	0.8851	1.0000	0.5365	0.4926
Relevance	0.1033	0.8192	0.5365	1.0000	0.5927
Satisfaction	0.0304	0.7060	0.4926	0.5927	1.0000

method: spearman

Table 8: Correlation matrix with p-values of Diference in Scores and Motivation for the group Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.7406	0.4421	0.5674	0.8667
Level of Motivation	0.7406	0.0000	0.0000	0.0000	0.0000
Attention	0.4421	0.0000	0.0000	0.0013	0.0036
Relevance	0.5674	0.0000	0.0013	0.0000	0.0003
Satisfaction	0.8667	0.0000	0.0036	0.0003	0.0000

method: spearman

5 Diference in Scores and Motivation for the group Master

Table 9: Correlation matrix of Diference in Scores and Motivation for the group Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	0.4248	0.5683	0.3518	0.1385
Level of Motivation	0.4248	1.0000	0.9557	0.8999	0.7663
Attention	0.5683	0.9557	1.0000	0.8915	0.5730
Relevance	0.3518	0.8999	0.8915	1.0000	0.5838
Satisfaction	0.1385	0.7663	0.5730	0.5838	1.0000

method: spearman

Table 10: Correlation matrix with p-values of Diference in Scores and Motivation for the group Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.1479	0.0427	0.2385	0.6518
Level of Motivation	0.1479	0.0000	0.0000	0.0000	0.0022
Attention	0.0427	0.0000	0.0000	0.0000	0.0407
Relevance	0.2385	0.0000	0.0000	0.0000	0.0362
Satisfaction	0.6518	0.0022	0.0407	0.0362	0.0000

method: spearman

6 Diference in Scores and Motivation for the group non-gamified.Apprentice

Table 11: Correlation matrix of Diference in Scores and Motivation for the group non-gamified.Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	0.0624	−0.0572	0.1693	0.1862
Level of Motivation	0.0624	1.0000	0.8062	0.8512	0.7618
Attention	−0.0572	0.8062	1.0000	0.4624	0.3627
Relevance	0.1693	0.8512	0.4624	1.0000	0.7596
Satisfaction	0.1862	0.7618	0.3627	0.7596	1.0000

method: spearman

Table 12: Correlation matrix with p-values of Diference in Scores and Motivation for the group non-gamified.Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.7997	0.8162	0.4883	0.4454
Level of Motivation	0.7997	0.0000	0.0000	0.0000	0.0002
Attention	0.8162	0.0000	0.0000	0.0462	0.1270
Relevance	0.4883	0.0000	0.0462	0.0000	0.0002
Satisfaction	0.4454	0.0002	0.1270	0.0002	0.0000

method: spearman

7 Diference in Scores and Motivation for the group non-gamified.Master

Table 13: Correlation matrix of Diference in Scores and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	0.6429	0.6429	0.6099	0.5302
Level of Motivation	0.6429	1.0000	1.0000	0.9027	0.7229
Attention	0.6429	1.0000	1.0000	0.9027	0.7229
Relevance	0.6099	0.9027	0.9027	1.0000	0.5679
Satisfaction	0.5302	0.7229	0.7229	0.5679	1.0000

method: spearman

Table 14: Correlation matrix with p-values of Diference in Scores and Motivation for the group non-gamified.Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.0962	0.0962	0.1084	0.1765
Level of Motivation	0.0962	0.0000	0.0000	0.0021	0.0427
Attention	0.0962	0.0000	0.0000	0.0021	0.0427
Relevance	0.1084	0.0021	0.0021	0.0000	0.1419
Satisfaction	0.1765	0.0427	0.0427	0.1419	0.0000

method: spearman

8 Diference in Scores and Motivation for the group ont-gamified.Apprentice

Table 15: Correlation matrix of Diference in Scores and Motivation for the group ont-gamified.Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	−0.3194	−0.4284	−0.2649	−0.1778
Level of Motivation	−0.3194	1.0000	0.9077	0.8031	0.7962
Attention	−0.4284	0.9077	1.0000	0.5697	0.8945
Relevance	−0.2649	0.8031	0.5697	1.0000	0.4509
Satisfaction	−0.1778	0.7962	0.8945	0.4509	1.0000

method: spearman

Table 16: Correlation matrix with p-values of Diference in Scores and Motivation for the group ont-gamified.Apprentice between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.2657	0.1264	0.3601	0.5431
Level of Motivation	0.2657	0.0000	0.0000	0.0005	0.0007
Attention	0.1264	0.0000	0.0000	0.0334	0.0000
Relevance	0.3601	0.0005	0.0334	0.0000	0.1056
Satisfaction	0.5431	0.0007	0.0000	0.1056	0.0000

method: spearman

9 Diference in Scores and Motivation for the group ont-gamified.Master

Table 17: Correlation matrix of Diference in Scores and Motivation for the group ont-gamified.Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	1.0000	−0.1000	0.2108	−0.1000	−0.7182
Level of Motivation	−0.1000	1.0000	0.9487	1.0000	0.5643
Attention	0.2108	0.9487	1.0000	0.9487	0.3515
Relevance	−0.1000	1.0000	0.9487	1.0000	0.5643
Satisfaction	−0.7182	0.5643	0.3515	0.5643	1.0000

method: spearman

Table 18: Correlation matrix with p-values of Diference in Scores and Motivation for the group ont-gamified.Master between participants' motivation and learning outcomes in the second empirical study

round	Diference in Scores	Level of Motivation	Attention	Relevance	Satisfaction
Diference in Scores	0.0000	0.9500	0.7336	0.9500	0.1718
Level of Motivation	0.9500	0.0000	0.0138	0.0167	0.3217
Attention	0.7336	0.0138	0.0000	0.0138	0.5619
Relevance	0.9500	0.0167	0.0138	0.0000	0.3217
Satisfaction	0.1718	0.3217	0.5619	0.3217	0.0000

method: spearman