The impact of an incremental and iterative teaching method on student learning and motivation

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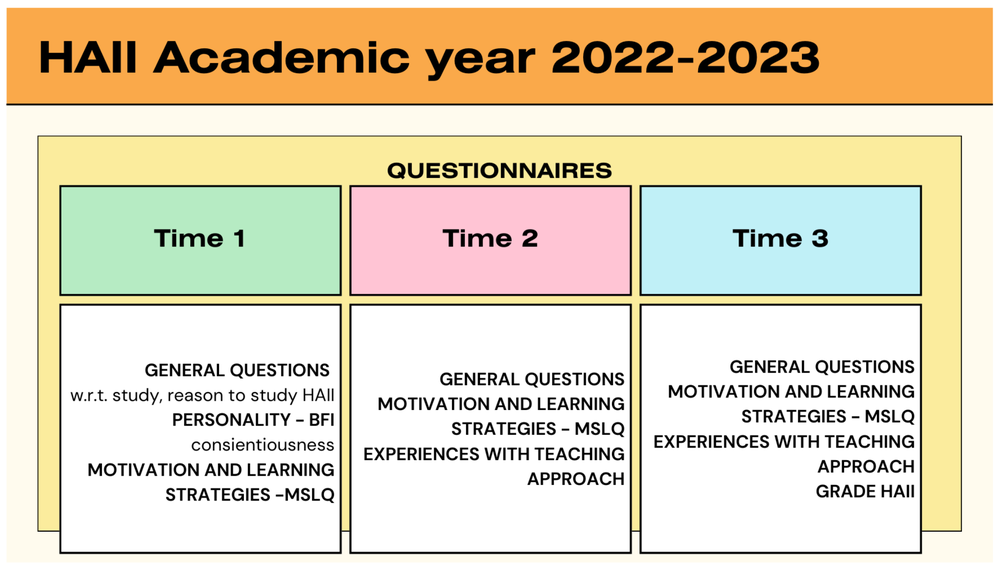
Incremental and iterative teaching

- Human AI Interaction (Master Computational Sciences, 6 ECTS)
- Wide diversity in prior knowledge + applying a combination of several disciplines
  - Rethink teaching approach
- Incremental + iterative method
  - Assessment based on the evolution of the student (group) through the iterations vs. fixed assessment moments that do not allow for further improvement opportunities
  - Stimulation of individual growth through collaborative learning
- 6 lectures
- 5 assignments (small groups)
  - all pass: 12/20
- Optional: individual assignm. 8/20
- Feedback sessions (6-15 sessions)
  - Do we get a "pass" on this assignment?
  - What do we need to do to get a "pass" on this assignment?
  - How do you expect us to do this?
  - Other questions

Research question

What is the impact of an iterative and incremental teaching and assessment approach on the study performance, perception, and motivation of students?

Study Design



Sample

23 students (11 all three questionnaires)

Results

Grade HAII

70 % 12/20
30% >12/20
Vs. previously: 8% vs 92% (Luyten & Notermans, 2018)

Focus Time 1 + Time 2

Differences between the group of students that chose to do the individual assignment vs. not?

Descriptive Statistics

	N	No. items	Minimum	Maximum	Mean	SD	Cronbach's alpha
T1 Conscientiousness*	20	9	2.22	4.22	3.38	0.54	.71
T1 Intrinsic Goal Orientation	20	3	3.33	6.33	5.18	0.77	.72
T1 Extrinsic Goal Orientation	20	4	1.00	7.00	3.56	1.64	.85
T1 Task value	20	6	4.67	6.17	5.34	0.44	.50
T1 Control of Learning Beliefs	20	4	4.25	7.00	5.91	0.71	.86
T1 Self-efficacy for learning and performance	20	8	3.38	7.00	5.34	0.79	.87
T2 Intrinsic Goal Orientation	17	3	3.33	6.67	5.26	0.85	.64
T2 Extrinsic Goal Orientation	17	4	1.00	5.75	3.57	1.29	.76
T2 Task value	17	6	3.67	6.83	5.20	0.84	.87
T2 Control of Learning Beliefs	17	4	4.25	7.00	5.81	0.77	.43
T2 Self-efficacy for learning and performance	17	8	2.25	6.63	5.35	1.00	.93
T2 Metacognitive self-regulation	17	12	2.67	5.58	4.22	0.80	.75
T2 Time and study environment	17	7	3.14	6.43	4.99	0.89	.70
T2 Effort regulation	17	4	3.00	7.00	4.91	1.03	.62

* BFI: Likert-scale from 1-5. All other scales (MSLQ): 1-7.

Comparison of means

Independent samples t-test

(+Mann-Whitney test: similar results)

Means for T1 and T2 variables with independent t-tests sign. at 0.05

	Grade	N	Mean	SD	SE Mean
T1 Intrinsic Goal Orientation	12	14	4.88	0.70	0.19
	>12	6	5.89	0.34	0.14
T2 Intrinsic Goal Orientation	12	11	4.82	0.64	0.19
	>12	6	6.06	0.57	0.23
T2 Control of Learning Beliefs	12	11	5.48	0.66	0.20
	>12	6	6.42	0.61	0.25
T2 Self-efficacy for learning and performance	12	11	5.01	1.05	0.32
	>12	6	5.96	0.58	0.24
T2 Metacognitive self-regulation	12	11	3.92	0.78	0.24
	>12	6	4.75	0.52	0.21
T2 Effort regulation	12	11	4.46	0.86	0.26
	>12	6	5.75	0.76	0.31
T2 The opportunity to achieve an individual score through the individual project has a positive effect on my learning process	12	11	3.55	0.82	0.25
	>12	6	4.83	0.41	0.17
T2 I am motivated to make the project	12	11	2.27	1.01	0.30
	>12	6	3.67	1.03	0.42
T2 I feel I can improve my competencies within the Human-AI Interaction course	12	11	3.55	0.69	0.21
	>12	6	4.50	0.84	0.34

References

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