

Learning Styles or Behavioural Styles? What affects student perception of a tutorial?

L. Ritter and T. Covic Scholarship in teaching Project Final Report

The Project

The Project involved testing a number of learning preference scales by administering questionnaires to CSU Students. Participants were 306 students comprised of 244 females and 62 males with an age range of 17-58 years ($M=20.77$, $SD=4.91$). Students were enrolled in a variety of degree programs, although 80% came from psychology or education based programs. Year of study ranged from first year (71%) through to fourth year.

Ethics approval was obtained for this study. Participants were recruited across the university via their lecturers/tutors and asked to complete surveys either during allocated class times or when it suited them. Completed surveys were returned to the research team with students' anonymity protected.

The participants provided a range of demographic information and then completed the following scales:

Tutorial Style Preferences (TSP) (created by L. Ritter)

Behavioural Style Quiz based on the DISC behavioural model (Marston, 1928)

Index of Learning Styles (Felder & Solomon)

Grascha-Reichman Student Learning Style Scales

Sternberg-Wagner Thinking Styles Inventory

Learning-Style Inventory – Version 3 (Kolb)

Analysis

To this point analysis of data has focussed primarily on evaluation of the TSP as a new scale that may have value in developing effective tutorials and in aiding in the development of effective on-line virtual tutorials. Analyses were conducted by Dr Covic using SPSS version 15. Factor analysis was performed on the TSP scale using principle components analysis (PCA) with oblimin rotation. PCA revealed the presence of four components with Eigenvalues greater than 1, explaining 18.4%, 10.9%, 5.4% and 4.9% of the variance respectively. On examination of the scree plot it was decided to retain all four components, and these explained a total of 39.6% of the variance. Two items (*formally structured debates; working in small groups*) were removed because they loaded less than 0.30, as recommended by Pallant (2007). One item (*not forced to participate*) was also removed in order to improve internal consistency. Items that loaded significantly on more than one factor were retained only on the factor on which they had the highest loading. In order to create subscale scores for the participants, items loading on each factor were summed and divided by the total number of items on that factor. Individual items were ranked according to their average level of endorsement by participants and Cronbach's alphas were calculated to determine the internal consistency of each of the four factors. The four factors derived from the principle components analysis for the TSP scale are presented in the following table, along with their item loadings, explained variance percentage, preference rankings and internal consistency coefficients.

Table 1 *Tutorial Style Preferences showing item and factor means and SD, item ranking and factor loadings (N = 306)*

	M	SD	Rank	Factors			
				1	2	3	4
1. Teacher-oriented (Cronbach alpha = 0.85, 18.4% variance)							
	3.86	0.53					
Handouts	3.80	1.00	18	0.65	0.10	0.08	-0.29
Clearly explained material	4.31	0.77	3	0.65	0.12	0.13	-0.05
Lots of information from tutor	3.81	0.91	16	0.64	0.20	0.02	-0.14
Orderly and well organised process	4.07	0.83	7	0.62	-0.11	0.16	0.16
Overheads to work from	3.32	1.14	28	0.62	0.08	0.02	-0.35
Direct teaching	3.77	0.91	20	0.61	-0.19	0.12	0.29
Strong control/leadership	3.67	0.91	25	0.59	0.02	0.03	0.23
Building blocks to create understanding	3.98	0.85	10	0.59	0.20	0.06	-0.11
Detailed guidelines	3.85	1.00	14	0.58	-0.02	0.04	0.11
Easily understood packaged knowledge	4.00	0.86	9	0.55	-0.13	0.15	0.20
Clear learning outcomes	4.17	0.84	5	0.55	0.06	0.24	0.31
Doing written exercises	2.88	0.95	36	0.51	0.21	-0.06	-0.09
Obvious relevance to subject/course	4.37	0.77	1	0.50	0.03	0.03	0.07
2. Student-oriented (Cronbach alpha = 0.81, 10.9% variance)							
	3.45	0.54					
Lots of debate and argument	3.13	1.04	32	-0.13	0.67	.12	0.05
Lots of different ideas	3.88	0.91	13	0.06	0.66	0.33	-0.01
Open ended discussion	3.75	0.85	21	0.10	0.62	0.21	-0.04
Material that stretches your thinking	3.81	0.85	17	-0.00	0.61	0.06	-0.05
Interesting debate	3.71	0.97	23	-0.10	0.61	0.34	0.07
Students in control, tutor facilitates	2.98	0.88	34	-0.13	0.54	0.20	0.03
Discussion based on readings	3.26	0.96	31	0.31	0.49	0.01	0.13
Broad exploration of topic	3.80	0.90	19	0.20	0.47	-0.30	0.17
Lots of analysis	3.54	0.95	27	0.32	0.46	-0.12	0.18
Everyone encouraged to participate	3.74	0.96	22	0.05	0.45	0.32	0.33
Following up interesting idea even if not directly relevant	3.12	1.02	33	-0.13	0.43	0.27	0.11
Students presenting papers	2.71	0.98	37	0.24	0.42	-0.06	0.03
3. Environmental (Cronbach alpha = 0.68, 5.4% variance)							
	3.90	0.59					
Humour	3.90	0.92	12	0.10	0.07	0.73	0.09
Entertaining	3.83	1.04	15	-0.01	0.20	0.68	0.02
An emotionally safe environment	4.14	0.92	6	0.11	0.27	0.51	-0.01
Bright people	3.31	1.05	29	0.03	0.04	0.51	0.04
Interesting topic	4.34	0.77	2	0.20	0.21	0.50	-0.09
A calm atmosphere	3.93	0.98	11	0.34	-0.06	0.47	0.12
4. Interactive (Cronbach alpha = 0.70, 5.4% variance)							
	3.88	0.67					
Lots of participation by you	3.62	1.04	26	0.10	0.36	0.06	0.60
Interactive discussion	4.02	0.90	8	0.05	0.41	0.16	0.54
Lots of participation by others	3.70	0.94	24	0.05	0.46	0.13	0.53
Strong direction by tutor	4.17	0.81	4	0.38	0.07	-0.04	0.41
Removed items							
Formally structured debates	2.63	0.92	38	0.26	0.36	-0.06	0.13
Working in small groups	3.26	1.04	30	0.23	0.28	0.27	-0.04
Not forced to participate	2.93	1.19	35	-0.05	-0.07	-0.03	0.52

12/06/2008

Outcomes and dissemination

Refereed Published Conference Paper:

L.Ritter (80%) and T. Covic (20%) 'What makes for a good tutorial: listening to the students', HERDSA Conference, UWA, July 2006.

Other Conference Papers:

L.Ritter and T Covic, 'Investigating Students' Preferred Learning Styles, with the aim of developing context specific applications', Learning and Teaching Conference, CSU, Bathurst 28-9 September, 2005.

T. Covic and L. Ritter, 'University Students' Learning Preferences and Styles', 9th European Congress of Psychology, 3-8 July, 2005

L. Ritter and T. Covic, 'Models of individual difference and their applicability to the learning-teaching relationship', ACE Conference, WA Convention Centre, September 2004

The project has produced a lode of valuable data, which is only just beginning to be mined in the above publications. At least two more papers are being prepared for submission to journals and it is envisioned that the exploration of the data will continue for some time after this.

Expenditure

It should be noted that in carrying out the project there was found to be more need for research assistance in managing the data in SPSS than was originally thought so some funds were used for that rather than for teaching release. A small amount was also used for inter library loans, which were not identified as a possible cost in the original budget.

Budget item	Original proposal	2004	2005	2006	2007	2008	Total
General salaries and on-costs (teaching release and research assistance)	8,374	1,517.90	2,144.61	101.63	1,809.3	3,178.35	8,751.79
Printing	945	149					149
Inter Library Loans	0		9.10				9.10
Conference Registration and travel for Covic*	0	658.42					658.42
Totals	9,319	2,325.32	2,153.71	101.63	1809.3	3178.35	9568.31**

* Not in the original budget, but approved by DVC Academic whose division was administering the funds at that time.

** Deficit (249.30) to be made up from L Ritter's funds in SSLS account.

12/06/2008

References

Marston, W. (1928). *Emotions of Normal People*. Oxford: Harcourt Brace

Pallant, J. (2007). *SPSS survival manual: a step-by-step guide to data analysis using SPSS for Windows (version 15)*. Crows Nest: Allen & Unwin.