Faculty of Science, Engineering & Technology
School of Psychology

Literacy levels of first year psychology students.

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Rationale

- Written communication skill remains the single most critical attribute for success in higher education.
- Dilemma
  - Students in Psychology programs
    - No training in any of the sciences at high school
    - Must now accommodate a scientific approach within the discipline
- This represents a significant factor impacting on the first-year experience of our students, given the estimated 16% of students who study psychology at first-year level across Australia.

Rationale

- Communication skills:
  - Considerable efforts made by Universities to provide resources and feedback designed to help students adapt to their disciplines and achieve this important Graduate Attribute.
- Written work typically comprises at least half of the assessment loading on grades in first-year subjects.
- Written and verbal feedback will often also be provided and the use of assessment “rubrics” has become almost universal to indicate where the students’ work does, or does not, meet criteria for the task.

Rationale

- Dissatisfaction with feedback is high (Gibbs & Simpson, 2004-5),
- Evidence for its effectiveness is sparse (Norton, 2002).
- Fundamental reason for this problem is the mismatch between nature of the feedback or instructions provided, and the students' capacity to integrate this information into their practices.
- This problem is especially acute for those students whose writing skills are weakest: those who most need help are the least likely to benefit from the advice provided.
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Rationale

- In order for students to be able to use the feedback on writing effectively they need first to be able to detect the variations in quality that give rise to the issues addressed by the marker.

Aim

- **The central objective of this project was the development, delivery, and evaluation of a teaching intervention to enable students to distinguish between good and poor writing in order to allow them to better understand feedback and instructions designed to improve the quality of their written work.**

Method

- Participants
  - KHA113 Psychology C cohort
  - 166 students (2 did not give consent)
  - 6 pracs
    - 4 on the Hobart campus (n=25, 20, 27, 31)
    - 2 on the Launceston campus (n=22, 23)

Procedure

- Pre-test
  - Literacy
  - Numeracy
  - Discrimination test
  - Summary assignment marked and subject to Pietrobon (SSQS) analysis (average of two raters)
  - Intervention

Procedure

- Post-test
  - Discrimination test after each intervention
  - Marks on two assignments
    - » Assignment 3 and Assignment 4
  - SSQS analysis on these Assignments (average of two raters)
  - Final exam mark (and Ass 5)

Procedure

- Intervention
  - Prac classes randomly assigned to Intervention or control
  - Experimental Group (Pracs 1, 3, 5)
    - Discrimination intervention
    - Ass 3
    - Control intervention
    - Ass 4
  - Control Group (Pracs 2, 4, 6)
    - Control intervention
    - Ass 3
    - Discrimination intervention
    - Ass 4

Interventions

- Discrimination
  - During one practical class participants discriminated between good and bad examples of English expression
    - **Exemplar A:** The hypothesis proved to be correct, however there were of issues the bear closer scrutiny in the research of delay discounting
    - **Exemplar B:** While results supported the hypothesis, issues inherent within delay discounting research should be considered when evaluating the results.

Interventions

- Control
  - During one practical class participants were given a lecture on English grammar
    - Scientific Writing Style
    - Organisation and Continuity
    - Fluent Expression
    - Economy of Expression
    - Punctuation (Period, Comma, Semicolon, Colon, Apostrophes)
    - Capitalisation
    - Abbreviation
    - Incomplete sentences
    - Similar words with different meanings
    - Wording choice
    - Spelling
    - Tense
    - Inclusive Language

Results

- Results for overall sample

Means of literacy tests

	N	Minimum	Maximum	Mean	Std. Deviation
Wlit	147	6	20	13.54	3.019
NLIt	147	6	20	14.81	3.313
DiscPre	142	5	15	10.96	2.000
DiscPost	120	6	15	11.62	1.681
Time 1 SSQS Total Mean for 2 Raters	147	15.5	52.5	33.939	7.0718
Time 2 SSQS Total Mean for 2 Raters	124	23.0	52.0	36.601	6.4307
Time 3 SSQS Total Mean for 2 Raters	123	19.5	53.0	36.520	6.2438
Ass3	126	7.3	17.0	12.321	2.2331
Ass4	119	6.0	17.0	12.059	2.2105
Ass5	119	5.0	18.0	12.567	2.3515
Exam	121	31.4583	85.2917	63.161329	11.8120804
Final	121	27.9792	85.5208	65.262689	10.1120420

SSQS pre-test

	N	Minimum	Maximum	Mean	Std. Deviation
SSQS pretest average of two raters below					
All sentences are entirely clear on first reading	147	1.00	5.00	2.8061	.87478
There are no consistent errors in tense usage	147	1.50	5.00	4.2177	.64920
Almost no grammatical errors	147	1.50	5.00	3.5136	.87965
No misspelled words	147	1.00	5.00	3.9796	1.01509
High-level scholarly engagement and inquiry	147	1.00	4.50	2.4898	.66587
Ideas are compared and contrasted from at least two perspectives	147	1.00	4.00	2.3061	.71780
There is a logical flow of argument	147	1.00	4.00	2.3095	.74790

	N	Minimum	Maximum	Mean	Std. Deviation
Writing style appropriately addresses a scientific audience	147	1.00	4.50	2.6497	.67341
Paragraphs are well arranged; transitions between ideas are efficient	147	1.00	4.50	2.2925	.71635
Sentences are correctly-structured, logical and coherent	147	1.00	4.50	2.5646	.82402
Perspective is original and mature with sophisticated language use	147	1.00	5.00	2.5578	.74603
A refined and developed understanding of the material is apparent	147	1.00	4.00	2.2517	.80744
Valid N (listwise)	81				

Results

	Wlit	NLIt	DiscPre	DiscPost	Time 1 SS(	Time 2 SS(	Time 3 SS(	Ass3	Ass4	Ass5	Exam	Final
Wlit	1	.392**	.280**	.274**	.465**	.339**	.238**	.362**	.389**	.406**	.437**	.420**
NLIt		1	.261**	.191*	.347**	.267**	.203*	.318**	.298**	.268**	.441**	.359**
DiscPre			1	.419**	.266**	.277**	0.166	.305**	.258**	.246**	.237*	.261**
DiscPost				1	.340**	.303**	.376**	.310**	.393**	.367**	.426**	.497**
Time 1 SSQS Total Mean for 2 Raters					1	.447**	.402**	.417**	.332**	.288**	.414**	.353**
Time 2 SSQS Total Mean for 2 Raters						1	.258**	.542**	.308**	.212*	.366**	.384**
Time 3 SSQS Total Mean for 2 Raters							1	.233*	.500**	.367**	.457**	.484**
Ass3								1	.284**	.373**	.503**	.546**
Ass4									1	.492**	.566**	.636**
Ass5										1	.543**	.717**
Exam											1	.919**
Final												1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Factor analysis. PCA and Varimax (orthogonal) rotation. Total variance accounted for =71%

Rotated Component Matrix[a]

	Component	
	1	2
All sentences are entirely clear on first reading	.499	.716
There are no consistent errors in tense usage	.163	.755
Almost no grammatical errors	.286	.804
No misspelled words	.086	.663
High-level scholarly engagement and inquiry	.817	.344
Ideas are compared and contrasted from at least two perspectives	.855	.070
There is a logical flow of argument	.804	.252
Writing style appropriately addresses a scientific audience	.745	.433
Paragraphs are well arranged; transitions between ideas are efficient	.770	.210
Sentences are correctly-structured, logical and coherent	.558	.712
Perspective is original and mature with sophisticated language use	.795	.397
A refined and developed understanding of the material is apparent	.862	.259

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Stepwise regression on Exam mark: adjusted Rsquare .48

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
5	(Constant)	7.257	8.771		.827	.411
	Time 3 SSQS Total Mean for 2 Raters	.538	.177	.283	3.048	.003
	NLIt	.789	.318	.217	2.479	.015
	DiscPost	1.403	.590	.207	2.377	.020
	REGR factor score 1 for analysis 1	2.677	1.131	.214	2.368	.020
	Wlit	.600	.296	.178	2.027	.046

Means for those who sat (and passed) or did not sit the final exam (or failed)

Group Statistics

	Did not sit, or failed, exam	N	Mean	Std. Deviation	Std. Error Mean
Wlit	.00	100	13.87	3.145	.315
	1.00	47	12.85	2.629	.383
NLIt	.00	100	15.39	3.165	.317
	1.00	47	13.57	3.315	.484
DiscPre	.00	96	11.17	2.030	.207
	1.00	46	10.52	1.883	.278
DiscPost	.00	91	11.97	1.410	.148
	1.00	29	10.52	1.993	.370
Time 1 SSQS Total Mean for 2 Raters	.00	99	35.308	6.6339	.6667
	1.00	48	31.115	7.1758	1.0357
Time 2 SSQS Total Mean for 2 Raters	.00	95	37.368	6.6876	.6861
	1.00	29	34.086	4.7922	.8899
Time 3 SSQS Total Mean for 2 Raters	.00	93	37.747	5.4696	.5672
	1.00	30	32.717	7.0217	1.2820

T tests for differences (students who passed exam vs those who failed or did not sit)

	t-test for Equality of Means						
				Mean		95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Std. Error Difference	Lower	Upper
Wlit	1.926	145	.056	1.019	.529	-.027	2.064
	2.054	106.339	.042	1.019	.496	.036	2.002
NLIt	3.195	145	.002	1.816	.568	.692	2.939
	3.142	86.487	.002	1.816	.578	.667	2.964
DiscPre	1.813	140	.072	.645	.356	-.058	1.348
	1.862	95.110	.066	.645	.346	-.043	1.332
DiscPost	4.336	118	.000	1.450	.334	.788	2.112
	3.638	37.346	.001	1.450	.399	.643	2.257
Time 1 SSQS Total Mean for 2	3.499	145	.001	4.1935	1.1985	1.8247	6.5623
Raters	3.404	86.869	.001	4.1935	1.2318	1.7452	6.6418
Time 2 SSQS Total Mean for 2	2.454	122	.016	3.2822	1.3373	.6350	5.9294
Raters	2.921	64.407	.005	3.2822	1.1237	1.0376	5.5268
Time 3 SSQS Total Mean for 2	4.075	121	.000	5.0306	1.2344	2.5868	7.4745
Raters	3.589	40.969	.001	5.0306	1.4018	2.1995	7.8618

Repeated measures ANOVA on three administrations of SSQS

(people who passed the exam)

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.
Repeats	Pillai's Trace	.124	6.284[a]	2.000	89.000	.003
	Wilks' Lambda	.876	6.284[a]	2.000	89.000	.003
	Hotelling's Trace	.141	6.284[a]	2.000	89.000	.003
	Roy's Largest Root	.141	6.284[a]	2.000	89.000	.003

Stepwise regression on exam performance (adjusted RSquared .31)

(Only for people who passed the exam)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3	(Constant)	35.401	7.820		4.527	.000
	Wlit	1.102	.273	.406	4.036	.000
	DiscPost	1.281	.632	.204	2.026	.047
	REGR factor score 1 for analysis 1	2.096	1.047	.202	2.002	.049

Stepwise regression on Assignment 5 mark: Adjusted Rsq .23 (only people who passed the exam)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	4.693	1.960		2.394	.019
	Wlit	.227	.069	.354	3.310	.001
	DiscPost	.410	.165	.266	2.482	.015

Comments

- Nature of the cohort
  - Distribution
- What does impact on performance?
- What is it about the people who fail or fail to sit the exam?