# Effective Reporting of Quantitative Data

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Australasian Evaluation Society Conference September 2008

# It's easy to get lost in the details

# Who are we writing for?

- Government
- Colleagues (journal article)
- Stakeholders

# Do they want the big picture?

# Some detail?

×

# Lots of detail?

# Or something else completely?

×

## The best presentation of quantitative data

- encourages the reader to think about the substance of the data
- helps the reader make sense of large amounts of data
- integrates statistical and verbal descriptions
- uses graphics that reveal data
- presents data honestly

# An example of greatness

• Napoleon's invasion of Russia

Reproduced from Tufte

### References

• Tufte, Edward *The Visual Display of Quantitative Information* 

• Few, Stephen Show Me the Numbers

### **General Principles for Communication**

### • Highlight the data

- Reduce the non-data ink
- Enhance the data ink

### • Organise the data

- Group the data
- Prioritise the data
- Sequence the data
- Integrate tables, charts and text

# **Visual Perception**

- Preattentive processing
  - Automatic and unconscious
  - Colour
  - Location of objects in 2D space
- Short term memory
  - Temporary
  - Limited capacity (between 3 & 9 chunks)

# **Preattentive Processing**

• 9873497902756479028947286240924060 

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• 9873497902756479028947286240924060 

# **Preattentive Processing**

- Form
- Colour
- Spatial position
- Motion

### Warning: <u>Too</u> man<sub>y</sub> variatio<sup>n</sup>s a<sup>r</sup>e distracting

### **Gestalt Principles of Visual Perception**

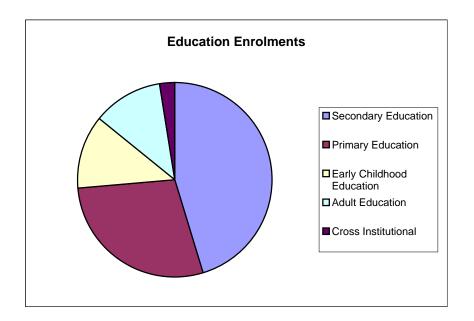
- Proximity
- Similarity
- Enclosure
- Closure
- Continuity

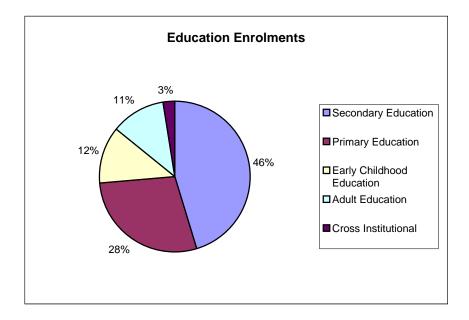
# **Table or Chart?**

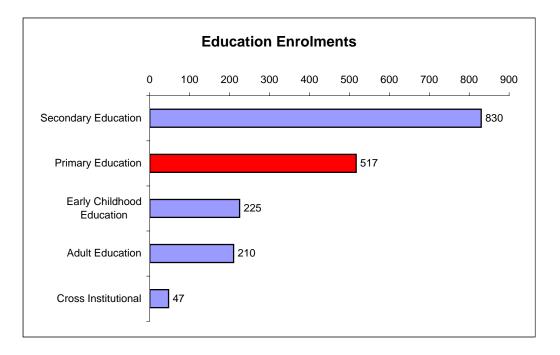
 Tables ideal for large quantities of data where specific items are looked up

 Charts ideal for presenting comparisons and trends

# Let's get to work on some examples







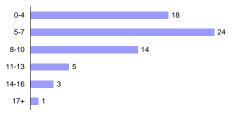
6%

#### Learning Experience Subset of the LEX Trial S2 2007 **TEST101** Enrolment: 85 **Total Responses:** 64 Students enrolled in this subject because: **Response Rate:** 75% Compulsory for my course 50 Interested in the subject for its own sake 12 Enhance employment prospects 6 Develop current career 8 Invalid Recommended by another student 3 Very Good No Response/ Very Poor Excellent Good Poor Neutral 100% 1. Overall, I would rate this unit/course as 3 5 <mark>5%</mark> 8% 23% 35% 29% 15 23 19 No Response/ Invalid Not Applicable Completely Moderately Somewhat Not at all Mostly 0% 100% ┥ - -100% 2. I understood what I needed to do to be successful in this unit/course 2<mark>%6% 11%</mark> 46% 8% 92% 1 4 7 30 23 3. I found the learning activities helpful 0%12% 49% 12% 20% 18% 88% 8 13 32 12 4. The assessment tasks allowed me to demonstrate what I learned 11% 0%11% 15% 34% 40% 89% 7 10 22 26 5. I found the assessment feedback helpful **6%** 8% 34% 14% 19% 33% 86% 4 5 12 22 21 6. The resources associated with this unit/course contributed to my learning

41%

3%8% 17%

### 7. How many hours per week did you spend working on this unit/course?



#### The three things I would recommend for this unit are:

94%

2 2 11

26 23

Make other units more like this one	40 x%
Change nothing – it was great	37 x%
Include a greater variety of assessment tasks	33 x%
Provide opportunities for practice without penalty	13 x%
Present material more clearly	11 x%
Improve the sequence of learning	10 x%

#### 8. The amount of work I was required to do was appropriate

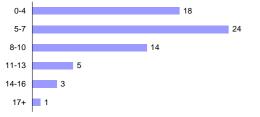
Yes 58 No 6

Student Feedback on

LEX Student Feedback on Learning Experience	Unive	rsity of	New England		Summa	Ā	t Re BCD	101
	Responses: Survey Gro Response R	up:	35 100 (All studer 35%	nts S1 2008)		0		2008
1.Why did you decide to do this unit?	Compulsory for m Interested in the subject for its o Enhance employment p Develop curren Recommended by another	own sake prospects nt career		X% 	X%			
	Guide to Colour Bar	s: Very I	Poor/Not at All Poor/A Little	0%	d/Mostly /Completely 100%	%	UJ #	Resp
<b>2. Overall</b> , <b>I would rate</b> Overall refers to your persona			% <mark>5</mark> 15	36 3	8 7	80%	0	35
3. I understood what I is successful in this unit: Success could be achieving a tasks, completing learning action personal learning goals	particular grade on assessment		9 9	31 35	26	82%	0	35
allocated. These might include	ng for which marks were NOT e lectures, tutorials, lab sessions, ccursions, reflective questions or		<mark>15</mark> 22	45	99	63%	1	33
5. The assessment task demonstrate what I lea Assessment tasks are anything marks were allocated.			20 20	50	10	60%	3	31
<b>6. I found the assessme</b> Assessment feedback refers to assessment tasks	•		25 20	30 13 <mark>1</mark> 2		55%	3	32
7. The resources assoc contributed to my lear Resources may include any of CD-ROM, online materials an video recordings, e-reserve, o resources	ning: Etextbook, handouts, study guide, ad discussion board, audio or	100%	<mark>9</mark> 9	31 19 0%	32	82%	1	34
8. How many hours per you spend working on a Include all time spent on learn such as class time (lectures, th sessions etc), reading, reflecti private study, field trips, excu intensive schools as well as the assessment tasks	this unit? $0-4$ ning activities $5-8$ ttorials, lab $5-8$ ng, online, $9-12$ rsions and $13-16$	<b>X%</b>	X%	9. I f requ	Teel the amo ired to do w are the workloa	as appr	opria	te:

<b>TEST101</b> Name of a Sample Unit for this Report				Enrolment: Total Responses:								
Students enro	lled in this sub	ject because:					Response Rate:			759		
Comp	pulsory for my course			50								
Interested in the sul	bject for its own sake	12										
Enhance er	mployment prospects	6										
De	evelop current career	8										
Recommende	ed by another student	3					or			poq	t	vul /esu
00%		Neu	ıtral 			100%	Very Poor	Poor	Good	Very Good	Excellent	No Resonae/ Invalid
	ould rate this u	nit/course as										2
		5 <mark>%</mark> 8%	23%	35%	29%		3	5	15	23	19	
												a ri
								at	۶		y⊧	Not Applicable
							at all	ewh	Moderately	Ϊγ	Completely	Appli
100% 🗲			% 			100%	Not at all	Somewhat	Mod	Mostly	Com	Not ,
2. I understoo	d what I needed	to do to be s	uccess	ful in this u	hit/course							
				iui iii uiis u	110000130				. — .		<b>.</b> .	
		2 <mark>%6</mark> %		46%	35%	92%	1	4	7	30	23	
8%		2 <mark>%</mark> 6%				92%	1	4	7	30	23	
8% 3. I found the I	learning activiti	2 <mark>%%</mark> % es helpful	<mark>11%</mark>	46%	35%		1					
8% 3. I found the I		2 <mark>%</mark> 6%				92% 88%	1	4	7			
8% <b>3. I found the I</b> 12%	learning activiti	2 <mark>%6%</mark> es helpful 0 <mark>% 12%</mark>	20%	46% 49%	35%		1					
8% 3. I found the I 12% 4. The assessi		2 <mark>%6%</mark> es helpful 0 <mark>% 12%</mark>	20%	46% 49%	35%	88%	1	8	13	32	12	
8% 3. I found the I 12% 4. The assessi	learning activiti	2 <mark>%6%</mark> es helpful <sup>0%12%</sup> wed me to de	20%	46% 49% ate what I le	35% 18%		1			32	12	
8% 3. I found the I 12% 4. The assessi 11%	learning activiti ment tasks allo	2 <mark>%%%</mark> es helpful 0%12% wed me to de 0 <mark>%11%</mark>	11% 20% monstra 15%	46% 49% ate what I le	35% 18%	88%	1	8	13	32	12	
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8% <b>3. I found the I</b> 12% <b>4. The assessi</b> 11% <b>5. I found the a</b> 14%	learning activiti ment tasks allo	2%% es helpful 0%12% wed me to de 0%11% edback helpfu	11% 20% monstra 15%	46% 49% Ate what I le 34%	35% 18% arned 40%	88% 89% 86%	-	8	13	32	12 26	

#### 7. How many hours per week did you spend working The three things I most want to tell other students about on this unit/course? this unit are:



### 8. The amount of work I was required to do was appropriate



I'd like more units to be more like this one	40 x%
It was great - I hope they don't change anything	37 x%
Lectures were a waste of time - don't bother going	33 x%
Lectures were clear and to the point - don't miss them!	13 x%
The topics didn't build on one another	11 x%
The topics built really well on one another	10 x%
Something else 1	3 x%
Something else 2	2 x%
Something else 3	1 x%
Something else 4	1 x%
Something else 5	1 x%

No 🚺 6

#### School of Education

Code EDUC101 EDUC102 EDUC111 EDUC112 EDUC201 EDUC202	Title Introduction to Primary Education Childhood Development Introduction to Year 7-10 Education Adolescent Development Understanding how Primary Aged Children Learn Inclusiveness in the Primary Classroom	2004 74 74 65 69 70 72	2005 78 75 66 75 72 71	2006 80 75 68 73 73 64	2007 83 74 70 76 72 69	2008 85 75 68 77
		-			· –	

Code	Title	2004	2005	2006	2007	2008
EDUC101	Introduction to Primary Education	74	78	80	83	85
EDUC102	Childhood Development	74	75	75	74	75
EDUC111	Introduction to Year 7-10 Education	65	66	68	70	68
EDUC112	Adolescent Development	69	75	73	76	77
EDUC201	Understanding how Primary Aged Children	70	72	73	72	
	Learn					
EDUC202	Inclusiveness in the Primary Classroom	72	71	64	69	
EDUC211	Understanding how Adolescents Learn	76	79	71	78	
EDUC212	Inclusiveness in Years 7-10	82	84	84	86	

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100 Level						
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EDUC111	Introduction to Year 7-10 Education	65	66	68	70	68
EDUC112	Adolescent Development	69	75	73	76	77
200 Level						
EDUC201	Understanding how Primary Aged Children Learn	70	72	73	72	
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Primary Edu	cation					
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EDUC102	Childhood Development	74	75	75	74	75
EDUC201	Understanding how Primary Aged Children Learn	70	72	73	72	
EDUC202	Inclusiveness in the Primary Classroom	72	71	64	69	
Secondary E	Education					
EDUC111	Introduction to Year 7-10 Education	65	66	68	70	68
EDUC112	Adolescent Development	69	75	73	76	77
EDUC211	Understanding how Adolescents Learn	76	79	71	78	
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EDUC211 EDUC212	Understanding how Adolescents Learn Inclusiveness in Years 7-10	76 82	79 84	71 84	78 86	
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EDUC102	Childhood Development	74	75	75	74	75
EDUC201	Understanding how Primary Aged Children Learn	70	72	73	72	
EDUC202	Inclusiveness in the Primary Classroom	72	71	64	69	
Average		72.5	74	73	74.5	80
Secondary I	Education					
EDUC111	Introduction to Year 7-10 Education	65	66	68	70	68
EDUC112	Adolescent Development	69	75	73	76	77
EDUC211	Understanding how Adolescents Learn	76	79	71	78	
EDUC212	Inclusiveness in Years 7-10	82	84	84	86	
Average		73	76	74	77.5	72.5

### School of Education

### **Overall Rating Percentage Agreement 2004-2008**

Code	Title	2004	2005	2006	2007	2008			
Primary Education									
EDUC101	Introduction to Primary Education	74	78	80	83	85			
EDUC102	Childhood Development	74	75	75	74	75			
EDUC201	Understanding how Primary Aged Children Learn	70	72	73	72				
EDUC202	Inclusiveness in the Primary Classroom	72	71	64	69				
Average	Primary Education	72.5	74	73	74.5	80			
Secondary Education									
EDUC111	Introduction to Year 7-10 Education	65	66	68	70	68			
EDUC112	Adolescent Development	69	75	73	76	77			
EDUC211	Understanding how Adolescents Learn	76	79	71	78				
EDUC212	Inclusiveness in Years 7-10	82	84	84	86				
Average	Secondary Education	73	76	74	77.5	72.5			

Overall rating percentage agreement = % of students selecting 3, 4 or 5 on a 5 point scale.

#### School of Education

### **Overall Rating Percentage Agreement 2004-2008**

Units rating less than 75 for more than 3 years 2004-2008 highlighted.

Code	Title	2004	2005	2006	2007	2008
EDUC101	Introduction to Primary Education	74	78	80	83	85
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