Department of Education, Training and Youth Affairs

Graduate Skills Assessment

Summary Report

The Australian Council for Educational Research (ACER)

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Training and Youth Affairs

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Executive Summary

In 1999, The Australian Council for Educational Research (ACER) was commissioned by the Department of Education, Training and Youth Affairs (DETYA) to develop a test of generic skills which could be administered at university entry and exit level. Following consultation with university representatives and other stakeholders, written communication, critical thinking, problem solving and interpersonal understandings were selected as the components of the initial Graduate Skills Assessment (GSA).

The GSA administration, data collection, marking, data analysis and reporting routines have been refined on the basis of an initial trial test and two test administrations-Exit 2000 and Entry 2001.

The GSA has satisfactory general statistical properties and is beginning to provide useful data on student generic skills that will be informative to universities, employers and the government.

- A total of 28 universities participated in the first two test administrations.

- early 1600 students from 19 universities participated in the GSA Exit 2000 test, the majority of whom came from Years 3 and 4.

- Over 2000 students from 20 universities participated in the GSA Entry 2001 test, the majority of whom were first degree students in the first year of an undergraduate course.

- In both tests students came from a wide range of study fields.

- The Exit group had a higher proportion of students undertaking a second degree.

- Basic statistics indicate test component reliability and discrimination between test components commensurate with other tests of this kind.

- Item difficulties show a satisfactory match with the range of university student abilities.

- A characteristic pattern of performance profiles related to the fields of study was seen in the Entry 2001 test, which was similar to that seen with the Exit 2000 test.

- Differential performance on the basis of gender was observed. For example, females generally outperformed males on the interpersonal understandings component, and males generally outperformed females on the problem solving component.

- Caution needs to be taken if comparing the performance of sub-groups participating in both the Exit 2000 and the Entry 2001 programs because of the largely voluntary nature of student participation.

- According to preliminary data from the validity study, factors that appear to be related to performance on all GSA test components are Field of Study (FOS), year level and language spoken at home. Gender and age seem to be related to performance on some components. These relationships need to be investigated further.

As indicated by data related to the trial, performance on the test is correlated with TER/UAI score. The current Validity Study is further elucidating this and other such relationships.

Despite the availability of data from the first two tests, larger and more representative samples will be needed before the aim of producing norms for specific Field of Study groups at particular year levels can be achieved, especially for fields that are currently grouped together.

Possible modifications of the test that are being considered at this stage include the addition of further components, such as basic skills, management skills, information technology skills, research skills and the addition of items to discriminate amongst high achievers. We have also considered the possibility of focusing elements of the current components for students in various broad Field of Study groups (e.g. Humanities, Business/Social Science, Science, IT) and inclusion of sets of items that may be of specific interest to a particular university or course.

1. Introduction

1.1 Background

The Australian Council for Educational Research was commissioned by the Department of Education, Training and Youth Affairs to consult with universities and other interested parties to identify a set of valued generic skills which could be effectively assessed at university entry and exit level. All Australian universities were invited to attend meetings at which representatives were asked to provide a list of skills they valued and would like to see assessed in their students (See Appendix A). Of the skills suggested, written communication, critical thinking, problem solving and interpersonal understandings were chosen for the initial test because they were 'popular', seemed to be essential elements of other skills (such as capacity for lifelong learning), and were likely to be transferable and readily measurable. Such skills were mentioned frequently by universities and employers in other countries. [1, 2]

The resulting test is called the Graduate Skills Assessment. In its current form the GSA consists of two hours of multiple-choice items and one-hour of writing tasks. More information regarding general analysis of results and trial statistics is available on our web site at http://www.acer.edu.au.

1.2 Component rationales

Because it is necessary to narrow the focus of the four broadly defined components (writing, critical thinking, problem solving and interpersonal understandings) in order to produce measurable test dimensions, many item types were trial tested and much consideration was given to criteria for item selection.

The four components are defined so that the skills assessed are expected to have a significant degree of transference to a new context once sufficient familiarity has been gained in that context (Gibbs *et al.*[3] and Mumford *et al.*[4]). The components are described below together with a rationale for the way they are defined in the GSA.

The GSA does not attempt to assess real-world performance directly. However, it is hoped that validity studies will show a strong positive relationship between test performance and real-world performance.

1 Assiter, A (ed.) (1995). *Transferable Skills in Higher Education*, Kogan Page, London.
2 *Academic Profiles Test*, Educational Testing Services, Princeton, NJ.
3 Gibbs et al. (1994). *Developing Students' Transferable Skills*, The Oxford Centre for Staff Development, Oxford.
4 Mumford et al. (1998). 'Creative Thinking Skills', Chapter 7, in *Beyond Multiple Choice: Evaluating Alternatives to Traditional Testing for Selection*, ed. Milton D. Hakel, Lawrence Erlbaum and Associates, New Jersey.

1.2.1 Written communication

The written communication component of the GSA comprises two tasks, a reporting task and an argument task. The reporting task requires students to comprehend, select, organise, paraphrase and clearly present factual information. The argument task requires students to develop a point of view about an issue and to structure and clearly present an argument in support of that view.

Assessment follows a fairly standard model where there is global assessment of each task on the basis of the following criteria:

- Language and Expression (including control of language conventions, clarity and effectiveness of expression);

- Organisation (including effectiveness and purposefulness of organisation); and

- Thought (including depth of analysis of issues or information).

1.2.2 Critical thinking

Norris and Ennis[5] make the following point:

> '...to evaluate students' critical thinking facility in general and thus estimate the likelihood they will think critically in new contexts, students should be presented with a wide variety of critical thinking tasks requiring background knowledge they already have.'

The focus of critical thinking is on reasoning in everyday contexts. Students are asked to comprehend, analyse and evaluate statements/passages that present real world viewpoints.

Since the ability to think critically depends on familiarity with the context, items used in the GSA tend to be generally accessible. There is an avoidance of specialised language, scientific, or mathematical material (some data interpretation is included in the Problem Solving component). To maximise psychometric coherence, non-verbal material is avoided.

The items are multiple-choice in format and can be categorised as follows (though a single item may have facets of more than one category):

- *Comprehension* in order to identify explicit and implicit meaning;

- *Analysis and Influence* in order to identify definitions being applied, claims being made, points of view, key issues, lines of reasoning, evidence, conclusions, arguments, assumptions, logical flaws, logical implications, missing information, rhetorical devices, ambiguity, analogies etc; and

- *Synthesis and Evaluation* in order to judge aspects such as the credibility and validity of evidence, lines of reasoning, conclusions and arguments.

5 Norris, S.P. and Ennis, R.H. (1989). *Evaluating Critical Thinking*, Critical Thinking Press and Software, CA.

1.2.3 Problem solving

Problem solving in the GSA focuses on generally applicable and accessible everyday problems that vary in complexity, and on the ability of students to identify, analyse, interpret, translate, reorganise and appropriately apply problem-related information. Students are expected to display a logical and organised approach in the analysis and application of relevant information. Specialised mathematical, interpersonal and business/administration problems are not addressed.

The items are multiple-choice in format and can be categorised as follows:

• Analysis, interpretation and evaluation of information for problem identification and decision making;

• Translation and reorganisation of information in progressing toward problem solution (including logical categorisation of information for task planning, translation and reorganisation of information to solve a problem); and

• Application of basic quantitative reasoning and numeracy to a problem;

where the following processes may be applied:

• Identify, comprehend, restate the problem;

• Identify and analyse information relevant to the problem;

• Represent features of the problem;

• Translate, reorganise, synthesise and apply information relevant to a problem;

• Conceptualise/generate strategy, identify problem solution; and

• Evaluate solution strategies and their outcomes.

1.2.4 Interpersonal understandings

'Interpersonal understandings' is a complex and evolving area. There is long history of a search for a factor to explain differences in how effectively people relate to others. Such ability is generally defined as how well one person understands others and can apply that understanding in social situations[6]. In this context, concepts such as Social intelligence,[7, 8] Interpersonal intelligence[9] and Emotional intelligence[10] have been theorised and have varying degrees of empirical support. The GSA interpersonal understandings component addresses a limited aspect of this field.

6   Wechsler, D. (1958). *The measurement and appraisal of adult intelligence* (4th edn), Williams, Baltimore.
7   Sternberg, R. J. and Smith, C. (1985). 'Social Intelligence and Decoding Skills in Non-Verbal Communication', *Social Cognition*, Vol. 3, No. 2, 168–192.
8   Legree, P. J. (1995). 'Evidence for an Oblique Social Intelligence Factor Established with a Likert-Based Testing Procedure', *Intelligence*, 21, 247–266.
9   Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences*, Basic Books, NY.
10 Mayer, J. D. et al. (1997). (Emotional Intelligence Meets Traditional Standards for an Intelligence', *Intelligence*, Vol. 27, No. 4, 267–298.

Interpersonal items are usually presented as text (which is generally low in verbal demand), though pictorial material may be used.

The items are multiple-choice in format and focus on the ability of students to:

- show insight into the feelings, motivation and behaviour of other people, and into issues related to helping or working with others; and

- recognise how such insight may be applied in order to effectively help or work with others, including effective feedback, listening, communication, negotiation, teamwork and leadership.

2. Summary of results for GSA

Major details and findings related to the GSA tests are summarised below:

- Students came from a wide range of study fields, though some fields and year levels were not well represented.

- Analysis indicates that both tests performed satisfactorily on the basis of conventional criteria such as internal reliability of components and discrimination between components.

- Characteristic performance profiles related to the Field of Study of students were observed in both tests.

- Larger and more representative samples will be required before the aims of producing norms for Field of Study groups at particular year levels, especially for fields that are currently grouped together, can be achieved.

2.1 General test component statistics

Standard Item Response Theory (IRT) techniques were employed in the analysis of results from the test, using ACER Quest for the multiple-choice components and ACER ConQuest for the writing components. Table 3 shows the correlation between components (Pearson) for the Entry 2001 test.

Table 1   Component correlations – all students, Entry 2001

	CT	PS	IP	Report	Argument
CT	–	0.62	0.70	0.48	0.54
PS	0.62	–	0.52	0.40	0.40
IP	0.70	0.52	–	0.46	0.53
Report	0.48	0.40	0.46		0.55
Argument	0.54	0.40	0.53	0.55	–

These correlation values are similar to those for the previous Exit 2000 test. Despite the significant correlation between critical thinking (CT) and interpersonal understandings (IP), LISREL confirmatory factor analysis was able to distinguish between items from the two components. Studies suggest that there are links between the areas of the brain related to social cognition and language processing, and both components are presented primarily as text, so a significant correlation may be expected, but test development will continue to refine these components.

Table 2 provides the correlation matrix for Entry 2000 with distributions normalised.

Table 2   Component correlations, normalised distributions – all students, Entry 2001

	CT	PS	IP	Report	Argument
CT	–	0.55	0.65	0.37	0.46
PS	0.55	–	0.50	0.29	0.31
IP	0.65	0.50	–	0.37	0.43
Report	0.37	0.29	0.37		0.46
Argument	0.46	0.310	0.43	0.46	–

See Appendix C for information about GSA score distribution.

Although the internal consistency for the Entry 2001 test is slightly lower than for Exit 2000, the internal consistency values (Table 3) are satisfactory for multiple-choice components of the length used.

Table 3   Internal consistency for multiple-choice components – all students

	Internal Consistency – Exit 2000	Internal Consistency – Entry 2001
PS	0.83	0.82
IP	0.81	0.79
CT	0.81	0.78

2.2 General data and results

In order to produce the GSA scores for the five components, student abilities (logits) determined by the IRT-based procedures were transformed to a suitable scale related to the level descriptions on the GSA test report (see Appendix F). As Table 4 indicates, the means for the Entry test students on the multiple-choice components are lower than for the Exit test student.

Interpretation of test results, based on the limited and largely self-selected sample that presented for both the GSA Exit 2000 and the GSA Entry 2001, requires caution. Larger and more representative samples will be needed to produce norms for specific fields of study at particular year levels. However, multi-variate analysis, which is being used for the GSA validity study, is teasing out the contributions of certain variables to test performance (including FOS, year level, gender, LOTE background and age). For details on the FOS groups see Appendix B.

The results reported in Table 4 indicate that Exit 2000 students generally outperformed Entry 2001 students. Note that the N varies because not all

Table 4   Mean GSA scores, standard deviations and standard errors for all students, GSA Exit 2000 and GSA Entry 2001

	Report		Argument		PS		CT		IP	
	Mean DS	N SE	Mean SD	N SE	Mean SD	N SE	Mean SD	N SE	Mean SD	N SE
Exit 2000	388	1548	383	1547	413	1597	421	1597	422	1597
	87	2	101	3	116	3	107	3	103	3
Entry 2001	370	1811	367	1774	380	2055	379	2055	394	2055
	88	2	92	2	110	2	100	2	98	2

Table 5   Mean GSA scores, standard deviations and standard error by gender GSA Entry 2001

Sex	Report		Argument		PS		CT		IP	
	Mean DS	N SE	Mean SD	N SE	Mean SD	N SE	Mean SD	N SE	Mean SD	N SE
M	363	790	359	772	391	859	375	859	388	859
	90	3	93	3	108	4	102	3	97	3
F	375	1019	372	1002	373	1189	382	1189	411	1189
	86	3	91	3	110	3	98	3	95	3
Missing	285	2	N/A		281	7	278	7	244	7
	8	6			110	41	96	36	121	46

students completed all parts of the test. However, the samples are not directly comparable because of their different compositions (e.g. proportions of students in different FOS).

The results reported in Table 5 indicate that gender seems to be related to performance on the test components. This observation is being elucidated in the validity study, preliminary results from which suggest that, in general, females tend to outperform males on the IP component and males tend to outperform females on the PS component.

It can be seen from Table 6 that the GSA score is related to FOS. However, it should also be noted that FOS results are affected by the precise composition of each Field of Study group (e.g. year level composition, proportion of part timers etc). The profiles of performance with respect to FOS are similar to those seen previously in the Exit 2000 sample.

Table 6   Mean GSA score, standard deviation and standard error by Field of Study, GSA Entry 2001

FOS	N	Report Mean/SD	Report N/SE	Argument Mean/SD	Argument N/SE	PS Mean/SD	PS N/SE	CT Mean/SD	CT N/SE	IP Mean/SD	IP N/SE
Arts/ Humanities	152	385	133	397	132	350	152	400	152	427	152
		82	7	92	8	120	10	90	7	96	8
Business/ Commerce	322	343	300	328	277	340	321	339	321	355	321
		89	5	90	5	112	6	100	6	96	5
Computer/IT	179	349	176	357	169	375	177	367	177	375	177
		77	6	77	6	97	7	101	8	96	7
Education/ Social Work	149	370	59	363	60	333	148	354	148	391	148
		71	9	88	11	85	7	85	7	90	7
Engineering/ Architecture	175	371	174	360	173	416	175	382	175	382	175
		91	7	87	7	94	7	95	7	96	7
Science/ Math.	485	370	440	358	437	392	482	378	482	386	482
		86	4	86	4	105	5	95	4	92	4
Law/Legal	18	388	16	421	16	408	18	439	18	454	18
		97	24	97	24	120	28	102	24	88	21
Medicine/ Dentistry	333	413	333	415	332	457	331	447	331	455	331
		81	4	84	5	92	5	84	5	83	5
Nursing	188	341	118	354	118	334	188	356	188	399	188
		80	7	94	9	85	6	84	6	79	6
No Data or Other	67	334	62	334	60	315	63	309	63	313	63
		100	13	114	15	106	13	112	14	122	15

2.3 Inter-quartile ranges by Field of Study

The following graphs provide information on inter-quartile ranges for students participating in the GSA 2001 Entry test. For each graph *N* is provided in Table 6. The box for each Field of Study gives the inter-quartile range. The line across the box is the median. The whiskers give the range of other scores up to a maximum of 1.5 inter-quartile distance. The asterisks give scores outside the whisker range.

Characteristic profiles of performance related to Field of Study are shown below and are similar to those seen in the Exit 2000 test. However, the result is related to the precise composition and size of the groups that participated in the test. The graphs in Appendix E provide information on the performances of larger groups (trial and both test populations combined).

Figure 1   Inter-quartile ranges, Entry 2001, Problem Solving
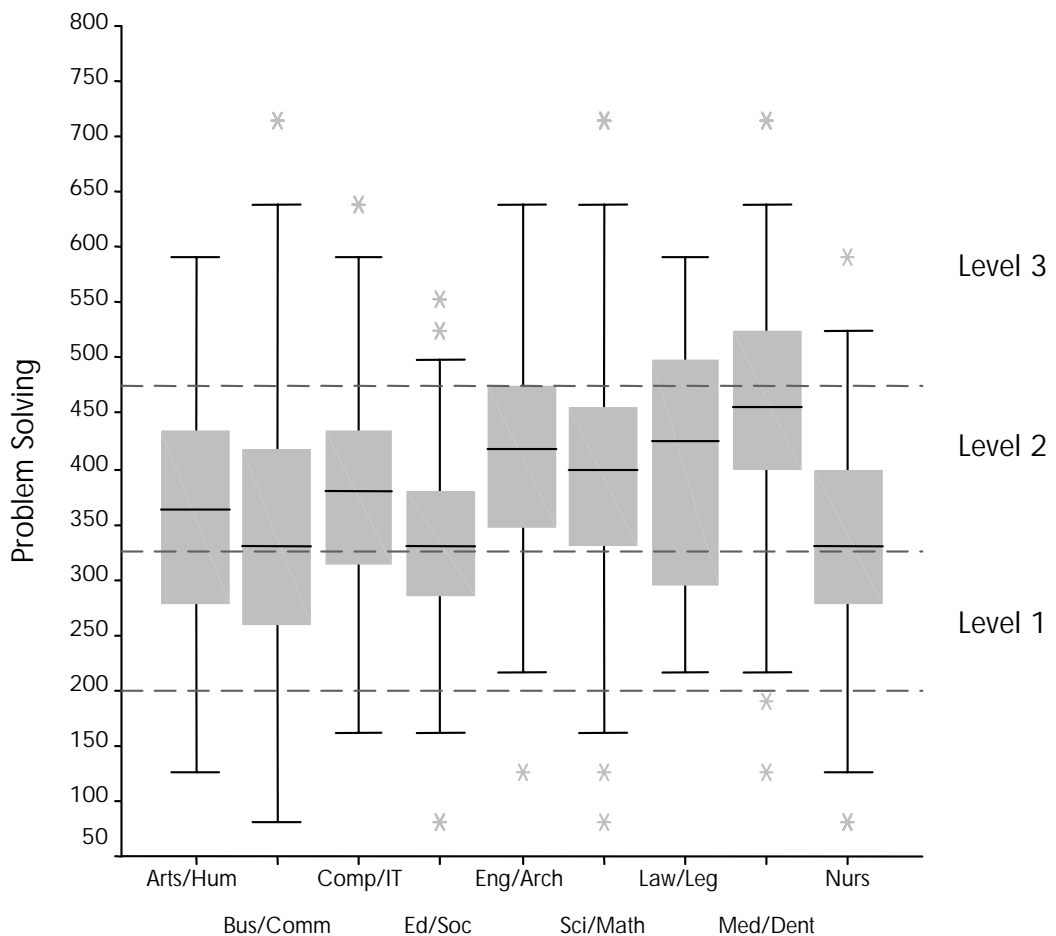
Figure 2   Inter-quartile ranges, Entry 2001, Critical Thinking
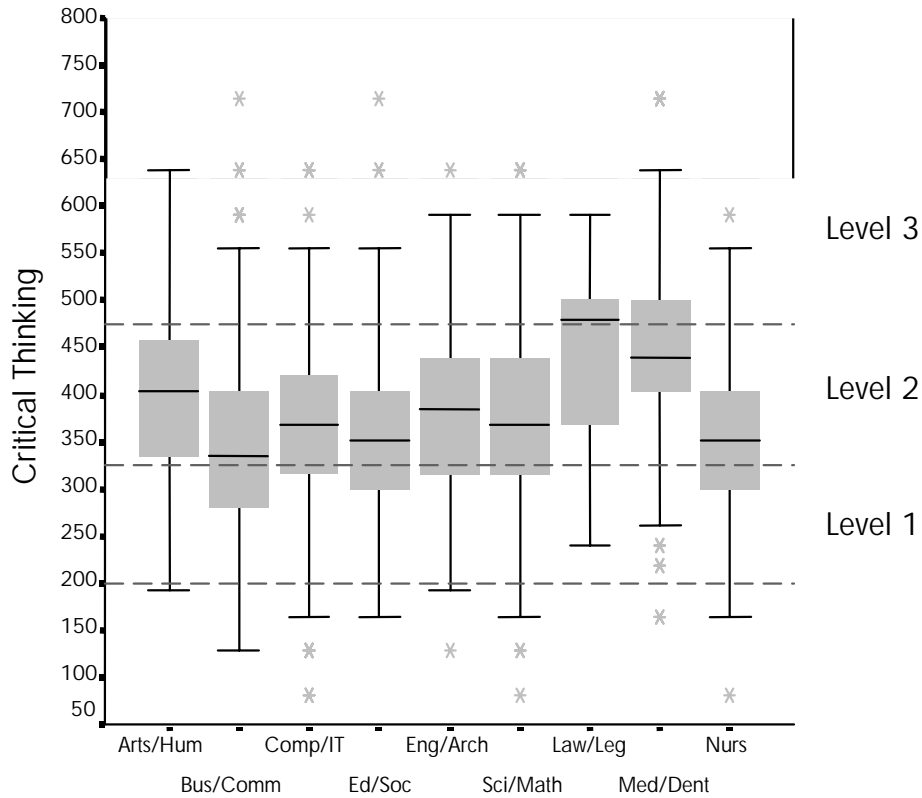
Figure 3   Inter-quartile ranges, Entry 2001, Interpersonal Understandings
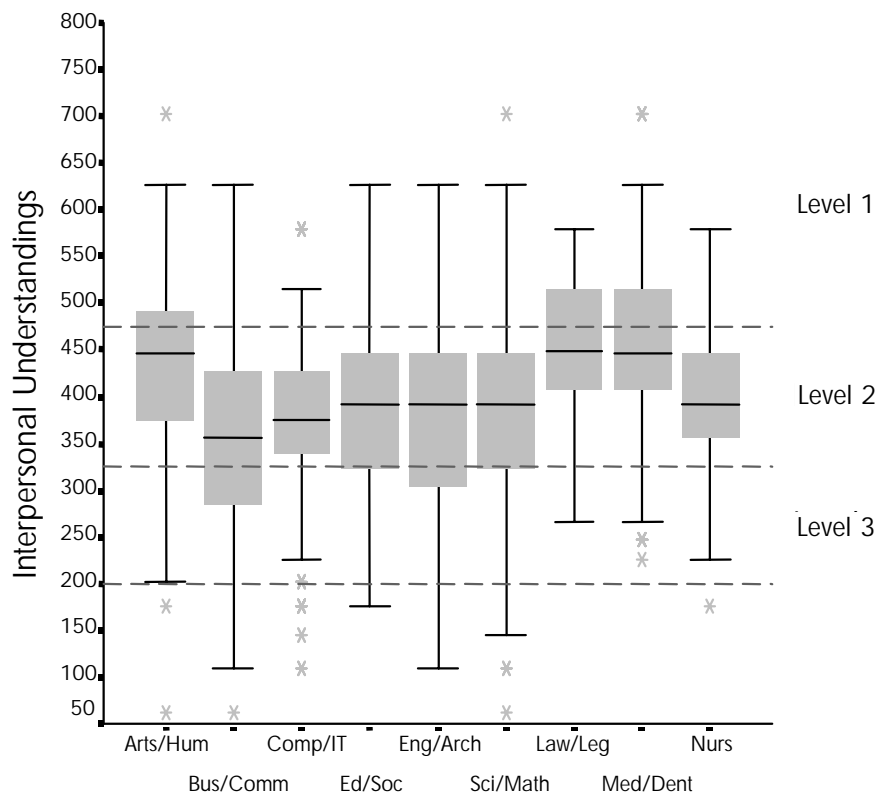
Figure 4   Inter-quartile ranges, Entry 2001, Report Writing
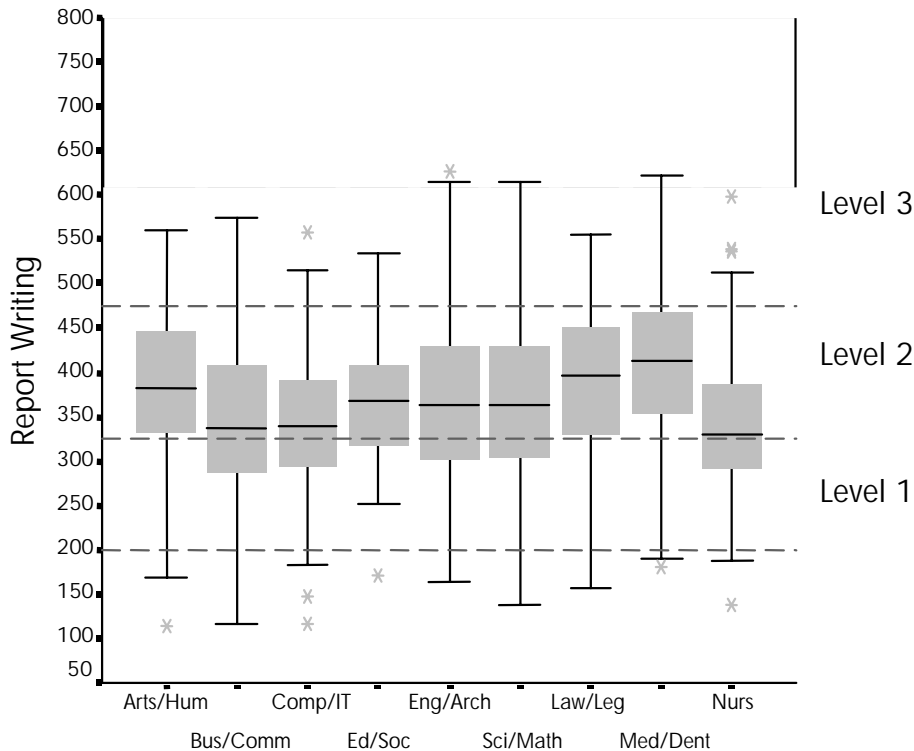
Figure 5   Inter-quartile ranges, Entry 2001, Argument Writing
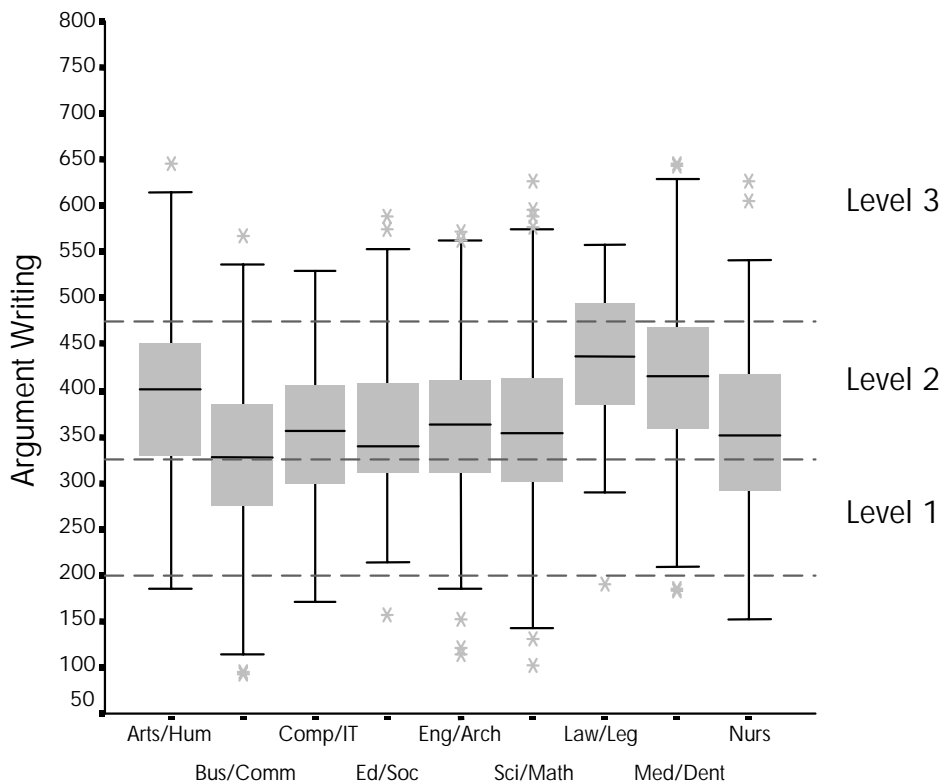
3. GSA score by year level for first degree undergraduates

Year level comparisons should be made for matched samples. Below are data (means with 95per cent confidence range) for students who were undergraduates in Business/Commerce, Arts/Humanities and Science/Maths who participated in the Exit 2000 or Entry 2001 tests. *N* for each group is given on the graphs. These are the best comparisons currently available with respect to score change with year level. Although the data need to be interpreted carefully because first and third year groups are not matched in a systematic way, these results are consistent with improvement of performance with year level. Multi-variate analysis has shown that year level is a major variable related to test performance, along with FOS. Larger and more representative samples are needed to confirm the relationships that might be suggested.

Figure 6   Scores by year level, first degree students, Problem Solving
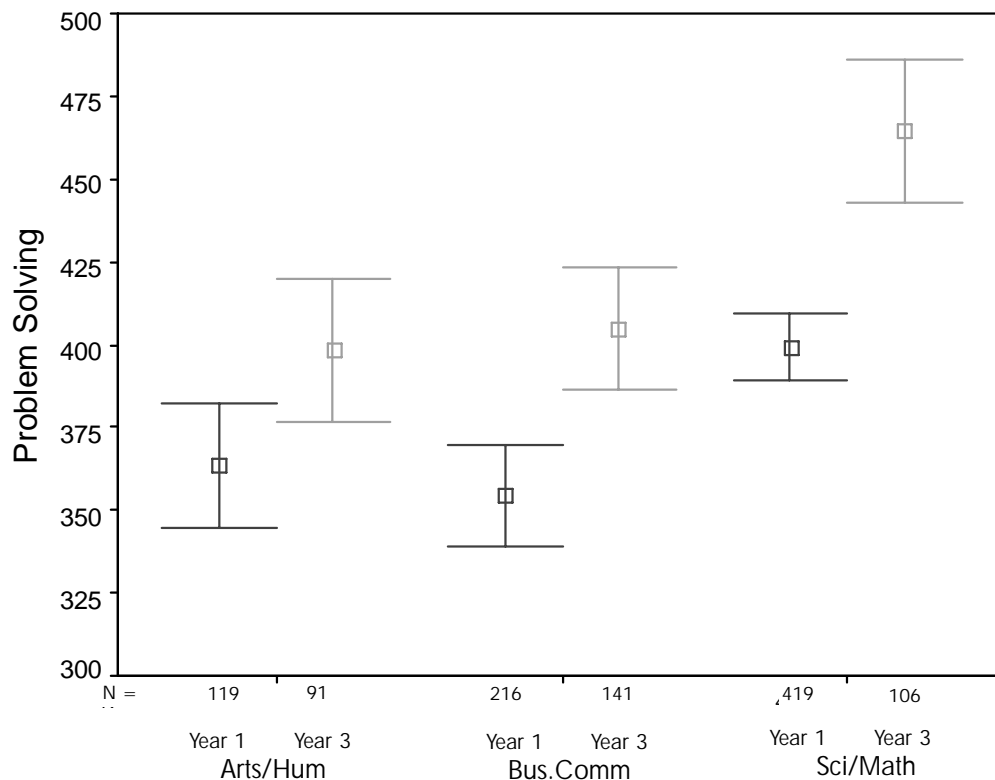
Figure 7   Scores by year level, first degree students, Critical Thinking
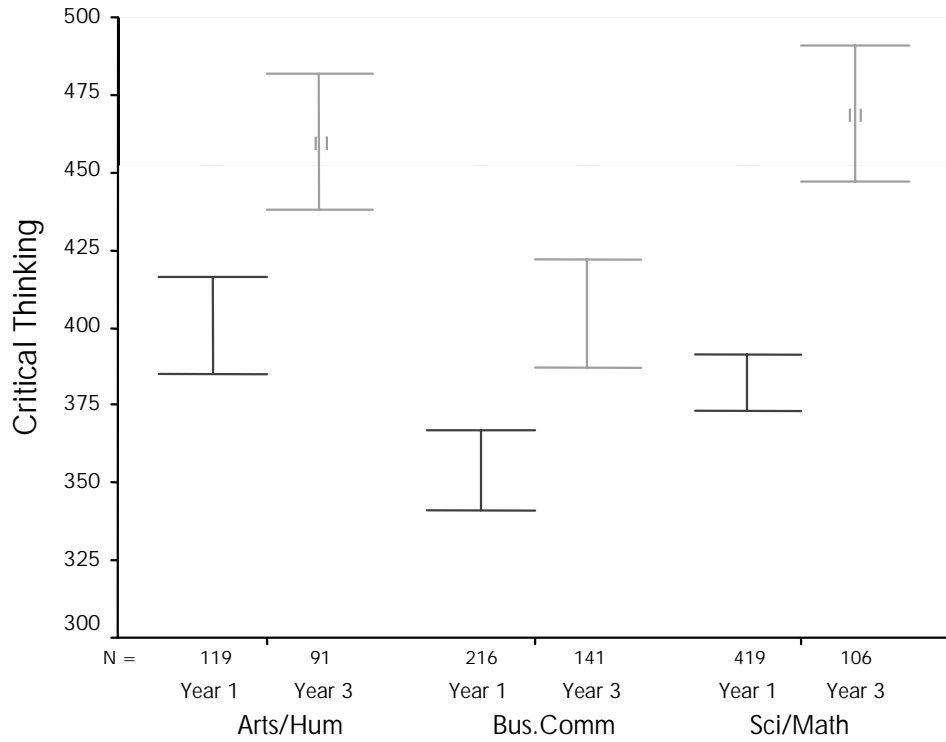
Figure 8   Scores by year level, first degree students, Interpersonal Understanding
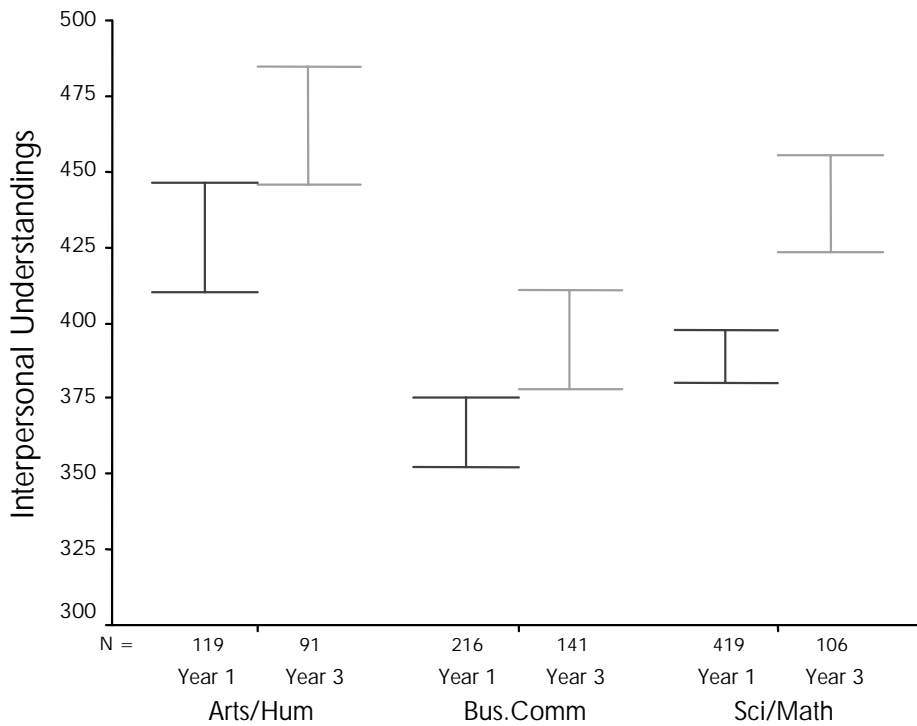
Figure 9   Scores by year level, first degree students, Report Writing
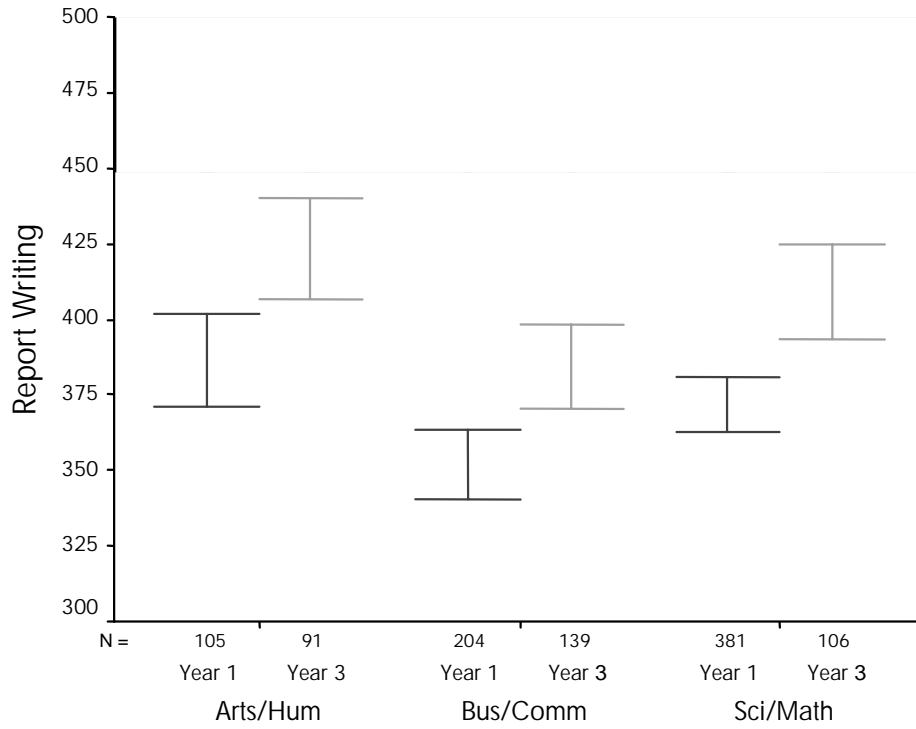
Figure 10   Scores by year level, first degree students, Argument Writing
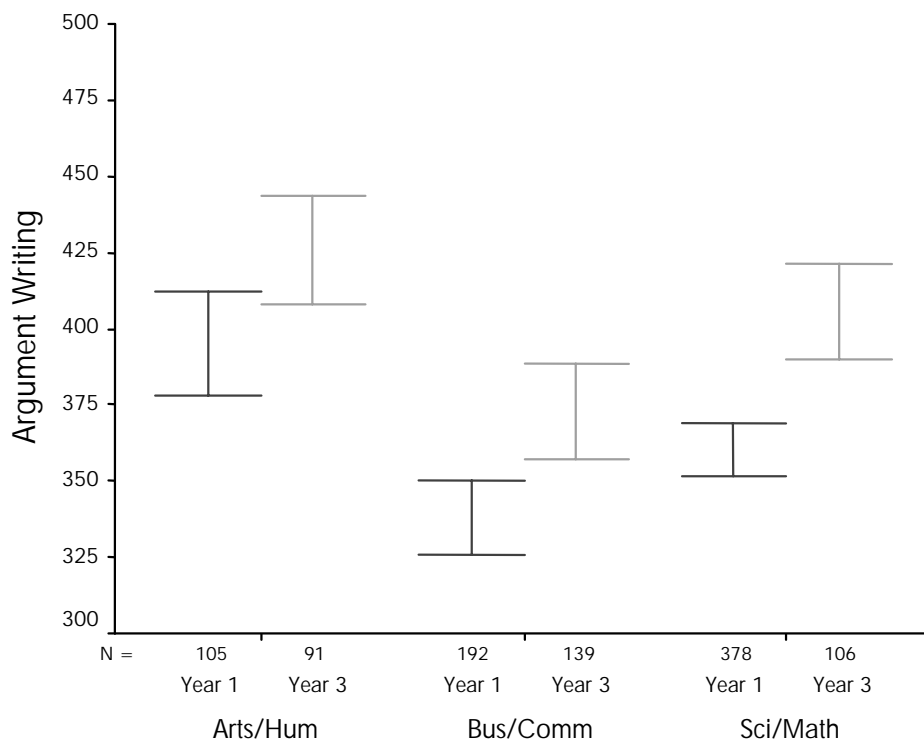
4. Test validity

It will take some time to assess test validity comprehensively. Initial validity work has focused on content validity and concurrent validity. There is evidence of significant correlations between student performance in UAI/TER subjects and GSA component scores for the trial test (see Appendix D). In addition, Field of Study, year level of course and LOTE background have been shown to be significantly related to performance on test components, and gender and age have been shown to be significantly related to performance on some test components. More detailed work, including further consultation with universities and employers, is under way.

4.1 Some conclusions based on data from two test administrations, and preliminary results of the stage one Validity Study

- According to preliminary data from the Validity Study, factors that appear to be related to performance on all GSA test components are Field of Study, year level and language spoken at home. Gender and age seem to be related to performance on some components. These relationships need to be investigated further.

- Performance on the test is correlated with TER/UAI score. The Validity Study is further elucidating this and other such relationships.

- Despite the availability of data from the first two tests, larger and more representative samples will be needed before the aim of producing norms for specific Field of Study groups at particular year levels can be achieved, especially for fields that are currently grouped together.

- Possible modifications of the test that are being considered at this stage include:

  1 the addition of further components, such as basic skills, management skills, information technology skills, research skills and the addition of items to discriminate amongst high achievers;

  2. the focusing of elements of the current components for students in various broad Field of Study groups (e.g. Humanities, Business/Social Science, Science, IT);

  3. the inclusion of sets of items that may be of specific interest to a particular university or course; and

  4. computer delivery of the test.

- Refinements to the current test components and methods of reporting may be introduced when validity studies are completed.

5. Possible uses of the test

At this stage, the GSA provides an indicator to universities and potential employers of certain generic skills in their students at entry level and exit level.

At entry level, universities may use the test diagnostically to identify, for example, those who write poorly or have trouble dealing with text-based critical thinking items or numeracy-dependent problem solving items. Such students who perform poorly could be offered assistance.

At exit level, results of the test may be used as an additional criterion for entry into post-graduate courses or as an indication of generic skills for an employer.

Universities may be interested in profiles of students in different courses.

Other uses of the test are possible and could evolve over time.

Additional components, such as those related to *Basic Skills, Management Skills, IT Literacy or Personal Skills*, may be added to the battery at a later date.

The test might also be modified to provide material specifically focused on major areas of study. Universities/departments may have the opportunity to add a set of items of specific interest to them.

Computer delivery of the test based on an item bank may enable selected test components to be delivered to particular groups of students.

6. Conclusion

As the data in the Results and Appendices sections indicate, the GSA test has generally satisfactory statistical properties and is beginning to provide useful data on student generic skills that should be informative to universities, employers and the government.

Item writing, administration, data collection, marking, data analysis and reporting routines have been developed and are being refined.

Significant findings so far include the observation of characteristic profiles of student performance related to Field of Study.

Initial validity work has focused on content validity and concurrent validity (which shows correlations between student performance in UAI/TER subjects and GSA component scores for the trial test). In addition, this work suggests that Field of Study, year level of course and LOTE background appear to be significantly related to performance on all test components, and Gender and Age appear to be significantly related to performance on some test components. More detailed validity work, including further consultation with universities and employers, is under way.

Larger and more representative samples will be needed before the aim of producing norms for specific Field of Study groups at particular year levels can be achieved.

Outcomes of validity work may be the modification of some technical aspects of the project and the addition of special component modules and the refocusing of current components.

7. Bibliography

Academic Profiles Test, Educational Testing Services, Princeton, NJ.

ACNielsen Research Services. (1998). *Research on Employer Satisfaction with Graduate Skills Interim Report,* Evaluations and Investigations Programme Higher Education Division, DEETYA.

ACNielsen Research Services. (2000). *Employer Satisfaction with Graduate Skills: Research Report,* Evaluations and Investigations Programme Higher Education Division, DETYA.

Anderson, D *et al.* (2000). *Quality Assurance in Australian Higher Education: An Assessment of Australian and International Practice,* Evaluations and Investigations Programme, Higher Education Division, Department of Education, Training and Youth Affairs, Canberra.

Agoustinos, M. & Walker, I. (1995). *Social Cognition: An Integrated Introduction,* Sage Publications, London.

Assiter, A. (ed.) (1995). *Transferable Skills in Higher Education,* Kogan Page, London.

Baron, R. A. & Byrne, D. (1991). *Social psychology: Understanding human interaction* (6th edn), Allyn & Bacon, Boston.

Brannick, M. T. *et al.* (1997). *Team Performance Assessment and Measurement: Theory, Methods and Applications,* Lawrence Erlbaum Associates, New Jersey.

Browne, M. N. & Keeley, S. M., (1998). *Asking the Right Question: A Guide to Critical Thinking* (5th edn), Prentice Hall.

Carnevale, P. J. & Pruitt, D. G. (1992). Negotiation and mediation. *Annual Review of Psychology,* 43, 531–582.

Carrol, J. B. (1993). *Human Cognitive Abilities,* Cambridge University Press, Cambridge.

Clanchy, J. & Ballard, B. (1995). Generic Skills in the Context of Higher Education, *Higher Education Research and Development,* 14(2), 155–166.

Conference Board of Canada (2000). *Employability Skills 2000+,* Conference Board of Ottawa, Ottawa.

Corbett, D. (2000). *Communication Skills for Workplace Assessors,* NSW AMES, New South Wales Department of Education and Training.

de Bono, E. (1977). *Lateral Thinking,* Pelican, London.

Dickson, D. A. (1997). Reflecting. In O.D.W. Hargie (ed.), *The handbook of communication skills* (2nd edn), 159–182, Routledge, London.

Diestler, S. (1998) *Becoming a Critical Thinker* (2nd edn), Prentice Hall, New Jersey.

Essential Skills Portfolio Developer, http://portfolio.telecampus.com/

Gallese, V. & Goldman, A. (1998). Mirror neurons and simulation theory of mind-reading, *Trends in Cognitive Sciences*, vol. 2, 493-501.

Gardner, H. (1993). *Frames of Mind: The Theory of Multiple Intelligences*, Basic Books, New York.

Gibbs *et al.* (1994). *Developing Students' Transferable Skills*, The Oxford Centre for Staff Development.

Goleman, D. (1998). *Working with Emotional Intelligence*, Bloomsbury, London.

Gottfredson, L. S. (1997). Why *g* matters: The complexity of everyday life, *Intelligence*, 24(1), 79–132.

Graduate Records Examinations, Educational Testing Services, Princeton.

Hager, *et al.* (2000). Teaching Critical Thinking in Undergraduate Science Courses, *Science and Education*, Kluwer Academic Publishers, 1–11.

Hakel, M. D. (1998). *Beyond Multiple-Choice: Evaluating Alternatives to Traditional Testing for Selection*, Lawrence Erlbaum Associates, New Jersey.

Hambur, S. (1997). *Generic Factors and Curriculum, An Investigation of Test Balance in Cross-curricular Tests: 1. A Comparison of AST-C and AST-E*, (unpublished internal monograph), ACER, Melbourne.

Hambur, S. (1998). *Generic Factors and Curriculum, A Review of Construct Validity and Factorial Balance in Cross-curricular Tests: 2. GAT and GAMSAT*, (unpublished internal monograph), ACER, Melbourne.

Hargie, O. D. W. (1997). (ed.). *The Handbook of Communication Skills* (2nd edn), Routledge, London.

Higgins, J. M. (1994). *101 Creative Problem Solving Techniques: The Handbook of New Ideas for Business*, The New Management Publishing Company, Winter Park, Florida.

Hoy, W. K. & Tarter, C. J. (1994). *Administrators Solving the Problems of Practice*, Allyn and Bacon, Boston.

Huszco, G. E. (1996). *Tools for Team Excellence*, Davies-Black Publishing, California.

Jones, E. & Ratcliffe, G. *Critical Thinking Skills for College Students*, ERIC-No.: ED358772.

Kahane, H. & Cavender, N. (1998). *Logic and Contemporary Rhetoric* (8th edn), Wadsworth Publishing Company, Belmont, California.

Katz, N. H. & Lawyer, J. W. (1992). *Communication and Conflict Resolution Skills.* Dubuque, IA: Kendall/Hunt.

Kelley, H. H. (1972). Attributions in social interaction. In E. E. Jones *et al.* (eds), *Attribution: Perceiving the Causes of Behaviour.* Morristown, NJ: General Learning Press.

Kuhn, D. (1999). A Developmental Model of Critical Thinking, *Educational Researcher,* 28(2), 16–26, March 1999.

Legree, P. J. (1995). Evidence for an Oblique Social Intelligence Factor Established with a Likert-Based Testing Procedure, *Intelligence,* 21, 247–266.

Marginson, S. (1995). *Competency–based Education: A compilation of views,* Paper presented at the Australian Education Union, January 1995.

Mayer, J. D. *et al.* (1997). Emotional Intelligence Meets Traditional Standards for an Intelligence, *Intelligence,* 27(4), 267–298.

McDonald, A. S. *et al.* (2001). Aptitude Testing for University Entrance: A Literature Review, The Sutton Trust, 2001.

McKenzie, K. & Schweitzer, R. (2001). Who Succeeds at University? Factors predicting academic performance in first year Australian university students, *Higher Education Research and Development,* 20(1), 21–33.

Morley, I. E. (1997). Negotiating and bargaining. In O.D.W. Hargie (Ed.), *The Handbook of Communication Skills* (2nd edn), 339–357, Routledge, London.

Mortensen, C. D. (1997). *Miscommunication.* Thousand Oaks, Sage Publications, CA.

Mumford, B. *et al.* (1998). Creative Thinking Skills, Chapter 7, in *Beyond Multiple-Choice: Evaluating Alternatives to Traditional Testing for Selection,* Hakel, M. D. ed., Lawrence Erlbaum Associates, New Jersey.

Murphy, R. *et al.* (1997). *The Key Skills of Students Entering Higher Education,* University of Nottingham for the Department for Education and Employment.

Myers, D. G. (1995). *Psychology* (4th edn), Worth, New York.

Norris, S. P. & Ennis, R. H. (1989). *Evaluating Critical Thinking,* Critical Thinking Press and Software, Pacific Grove, California.

Paul, R. (1994). *Critical Thinking,* Hawker Brownlow Education, Australia.

Pithers, R. T. & Soden, R. (2000). Critical Thinking in Education: A Review, *Educational Research,* 42(3), 237–249, Winter 2000.

Polya, G. (1957). *How To Solve It* (2nd edn), Doubleday Anchor.

Rakos, R. F. (1997). Asserting and Confronting. In O.D.W. Hargie (ed.), *The Handbook of Communication Skills* (2nd edn), 289–319. Routledge, London.

Scholtes, R. S. (1998). *The Leader's Handbook,* McGraw-Hill, NY.

Scholtes, R. S. *et al.* (1996). *The Team Handbook,* Oriel Incorporated, Madison, WI.

Stanton, J. (1995). *Business, Industry and Key Competencies*, National Industry Education Forum.

Sternberg, R. J. & Smith, C. (1985). Social Intelligence and Decoding Skills in Non-Verbal Communication, *Social Cognition*, 3(2), 168–192.

Sternberg, R. J. (1995). *In Search of the Human Mind,* Harcourt Brace, Fort Worth, TX.

Test of Workplace Essential Skills, http://www.towes.com/.

The Association of Graduate Recruiters (1995). *Skills for Graduates in the 21st Century*, The Association of Graduate Recruiters, Cambridge.

The Australian Psychological Society (1999). Comparison of Employers' and Academics Views about the Importance of Generic Competencies for Psychology Graduates, *Interface*, 27 April, 1999, 1–2.

The Secretary's Commission on Achieving Necessary Skills, Skills and Tasks for Jobs: A SCANS Report for America 2000, US Department of Labor.

van Gelder, T. (2000). *The Efficacy of Undergraduate Critical Thinking Courses: A Survey in Progress*, http://www.philosophy.unimelb.edu.au/reason/efficacy.html.

Watson, G. & Glaser, E. M. (1980). *Watson-Glaser Critical Thinking Appraisal Manual*, Psychological Corporation, New York.

Wechsler, D. (1958). The measurement and appraisal of adult intelligence (4th Ed). Williams and Wilkins, Baltimore.

Weiner, B. (1986). An attributional theory of achievement motivation and emotion *in An Attributional Theory of Motivation and Emotion,* Chapter 6, Springer-Verlag, New York.

Whimbey, A. & Lochhead, J. (1991). *Problem Solving and Comprehension,* Lawrence Erlbaum and Associates, New Jersey.

Appendix A
Responses to consultation

Table A1 summarises for the initial consultation the views of university representatives (or the official positions of universities) and other stakeholders with respect to generic skills components deemed to be important. The suggested components can be divided into two groups, those focusing on cognitive skills and those focusing on attitudes. The components selected for the first GSA are from the cognitive group.

Table A1   Responses to consultation

Component	Institutions — official or general	Other stakeholders (such as employers and careers councils)
Communication/structured written response	///// ///// ///// ///// /	///// /
Problem solving/applied reasoning/strategic	///// ///// ///// /	///// /
Analytical skills	///// ////	/////
Critical thinking	///// ///// /////	//
Logical reasoning	///// ////	//
Ethics/citizenship/social responsibility/empathy	///// ///// /////	///
Creativity	///// ///	//
Interpersonal skills/teamwork/leadership	///// ///// ///// ////	///// //
Sceptical but open-minded	///// ///	
Flexibility/tolerate uncertainty	///// /	//
Capacity for or commitment to lifelong/ independent learning	///// ///// //	///
Numeracy/ability to quantify	///// /	//
Literacy	///	/
IT familiarity/IT use	///// ///// ///	///
Personal skills/self-management/reflective/ confidence/self-reliance/initiative	///// /	/////
Global/national/historical/cross-cultural perspective	///// //	//
Information literacy/management/research skills	///// ///	

Although written communication, problem solving, critical thinking and interpersonal understandings were chosen, these involve skills such as analysis, logical reasoning, literacy, numeracy, empathy and, to some extent, creativity, which are listed separately. In addition, an ability to identify and absorb key information, reflect and organise one's thoughts and actions would seem to be important for success in all the four chosen components, and would be related to a capacity for lifelong learning.

Appendix B
Field of Study groups

Table B1 illustrates how smaller Field of Study groups were combined into larger groups for the purposes of reporting. In the future, if bigger samples are collected for these smaller groups, results for each group could be reported separately. The Field of Study codes are explained in Table B2 (on the next page) the Field of Study Guide.

Table B1   Field of Study groups

Field of Study Group	Field of Study Codes
Arts/Humanities	031, 032, 033, 034
Business/Commerce	041, 042, 130
Computers/IT	051, 052
Education/Social	061, 062, 120
Engineering/Architecture	010, 070
Science/Math	020, 103, 111, 112, 113, 090
Law/Legal	080, 081
Medicine/Dentistry	101
Nursing	102

Table B2   Field of Study guide

Field	Code	Field	Code
Architecture/Built Environment (e.g. Architecture, Construction, Drafting, Environmental Design, Landscape Architecture, Surveying)	010	Computer – Information Technology (e.g. Data Communication, Information Management)	052
Agriculture/Animal Husbandry/ Environmental Management (e.g. Agriculture, Animal Husbandry, Environmental Management, Environmental Science, Forestry, Parks and Wildlife, Plant Science, Soil Science, Resource Management, Rural Management)	020	Education – Primary/Early Childhood	061
		Education – Secondary	062
		Engineering	070
		Law	080
		Legal Studies	081
		Mathematics	090
Arts – Creative (e.g. Drama, Dance, Fine Arts, Graphic Design, Film, Media Studies, Music, Photography, Visual Arts)	031	Health – Medical (e.g. Dentistry, Medicine, Veterinary)	101
		Health – Nursing	102
Arts – Humanities (e.g. Asian Studies, Australian Studies, English, History, Journalism, Library, Linguistics, Literature, Philosophy, Politics, Public Relations, Theology, Writing and Editing)	032	Health – Science (e.g. Nutrition, Medical Technology, Occupational Therapy, Optometry, Pharmacy, Physiotherapy, Podiatry, Speech Pathology)	103
Arts – Social Science (e.g. Anthropology, Geography, Government, Psychology, Sociology)	033	Science – Applied (e.g. Animal Technology, Aviation, Biotechnology, Electronics, Food Technology, Marine Science, Sports Science)	111
Arts – Languages	034	Science – Biological (e.g. Behavioural Science, Biology, Biochemistry, Genetics, Microbiology, Pharmacology, Physiology, Psychology, Zoology)	112
Business – Financial (e.g. Accounting, Actuarial Studies, Economics, Finance)	041		
Business – Management/Marketing (e.g. Administration, Business Studies, Human Resource, Industrial Relations, International Business, Public Relations)	042	Science – Physical (e.g. Chemistry, Earth Science, Meteorology, Physics)	113
		Social Work/Community Services	120
Computer – Programming/Design (e.g. Computer Studies, Multimedia, Programming, Systems Analysis)	051	Tourism/Hospitality/Catering	130
		Other	140

Appendix C
Score distributions for GSA

Figures C.1 to C.5 give GSA score distributions for the five components. With the transformation to logits, skewness is attenuated. The distribution of GSA scores for each component is roughly normal. Because there were a limited number of items and relatively few items at some difficulty levels, there are gaps in the distributions for the multiple-choice components (PS, CT and IP). In particular, there is more measurement error in the very high score range than elsewhere. (This could be addressed by adding more items but this would mean lengthening the test, which is impractical. If there were a need for more reliability at the top or bottom of the range special additional modules could be added).

Figure C1   GSA score frequencies, GSA Entry 2001, Problem Solving
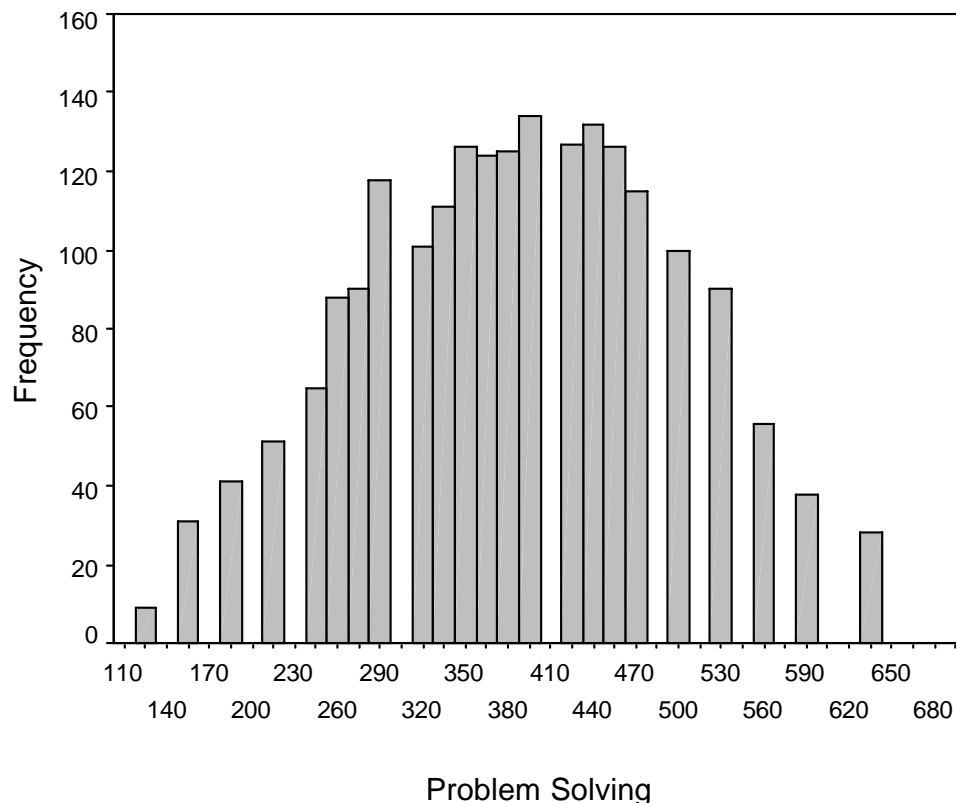
Problem Solving

Table C1   GSA score data, GSA Entry 2001, Problem Solving

	All students	Males	Females
Mean	380.15	390.55	373.21
SD	109.83	108.00	110.39
SE	2.42	3.68	3.20
Skewness	–0.06	0.10	–0.07
Kurtosis	0.67	0.41	0.81

Figure C2   GSA score frequencies, GSA Entry 2001, Critical Thinking
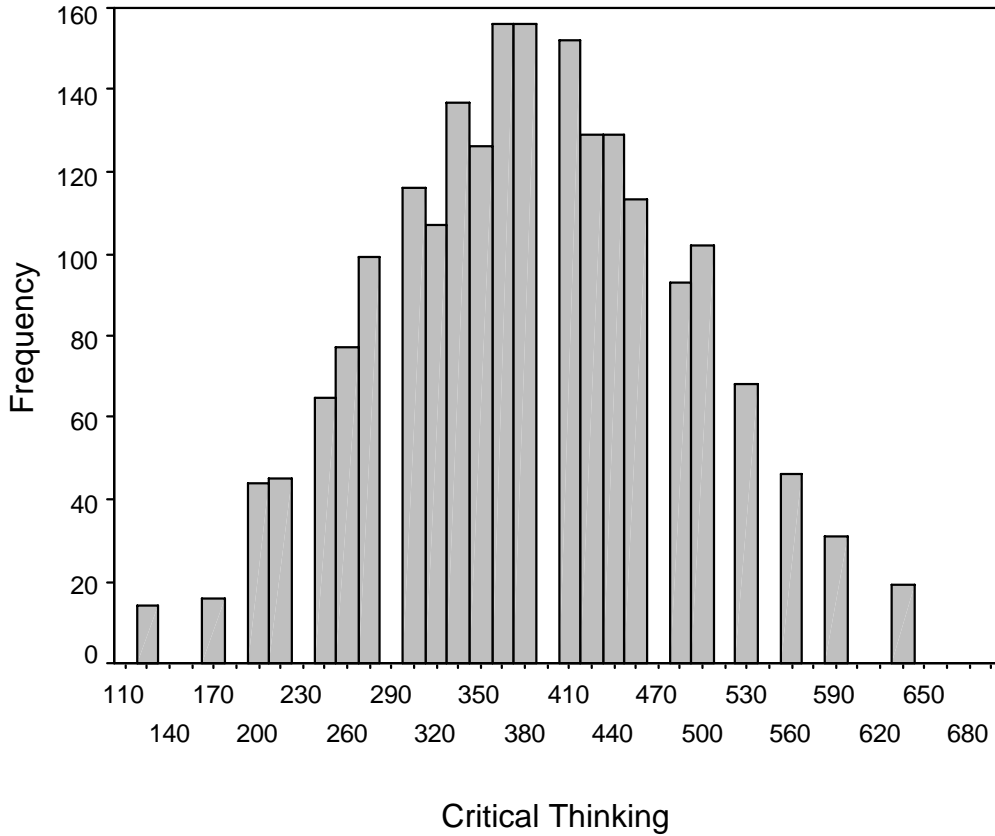
Critical Thinking

Table C2   GSA score data, GSA Entry 2001, Critical Thinking

	All students	Males	Females
Mean	378.90	374.83	382.44
SD	99.75	101.59	98.07
SE	2.20	3.47	2.84
Skewness	−0.07	0.07	−0.57
Kurtosis	0.52	0.20	0.81

Figure C3   GSA score frequencies, GSA Entry 2001, Interpersonal
             Understandings

Interpersonal Understandings
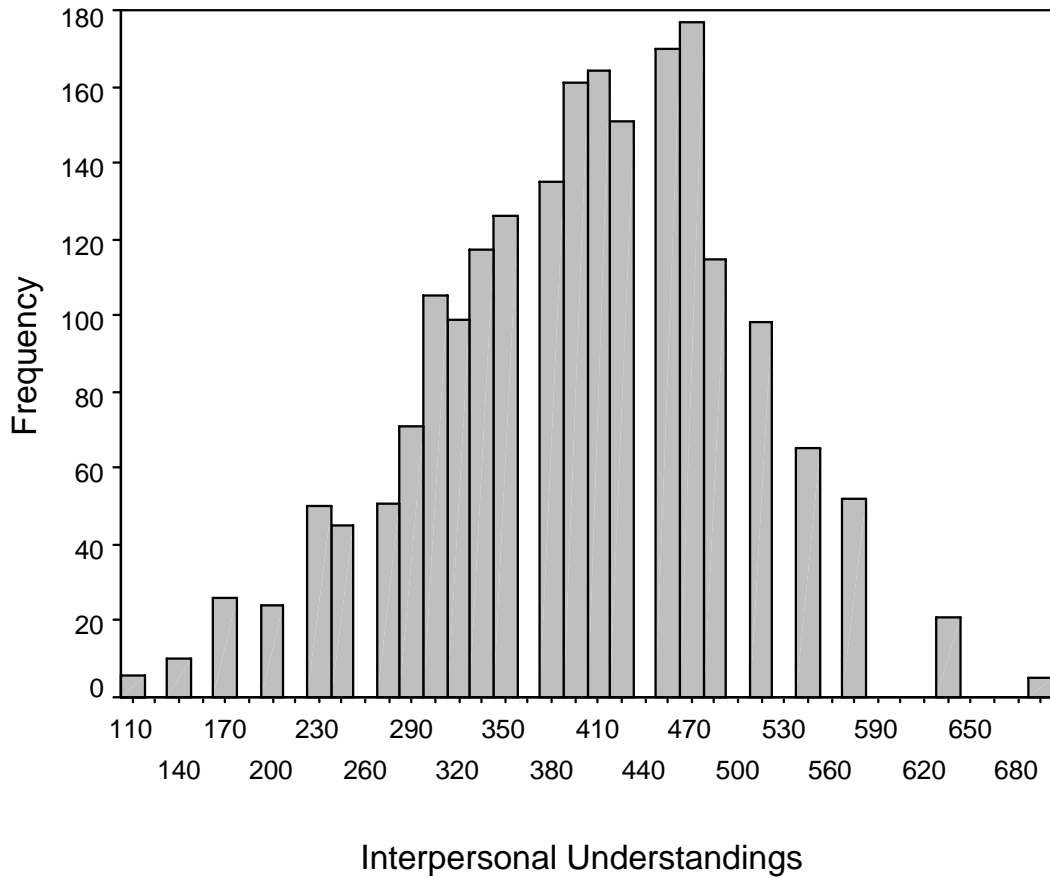
Table C3   GSA score data, GSA Entry 2001, Interpersonal
            Understandings

	All students	Males	Females
Mean	394.05	371.87	410.96
SD	98.10	97.32	94.61
SE	2.16	3.32	2.74
Skewness	–0.33	–0.41	–0.22
Kurtosis	0.71	0.57	0.64

Figure C4   GSA score frequencies, GSA Entry 2001,Report Writing
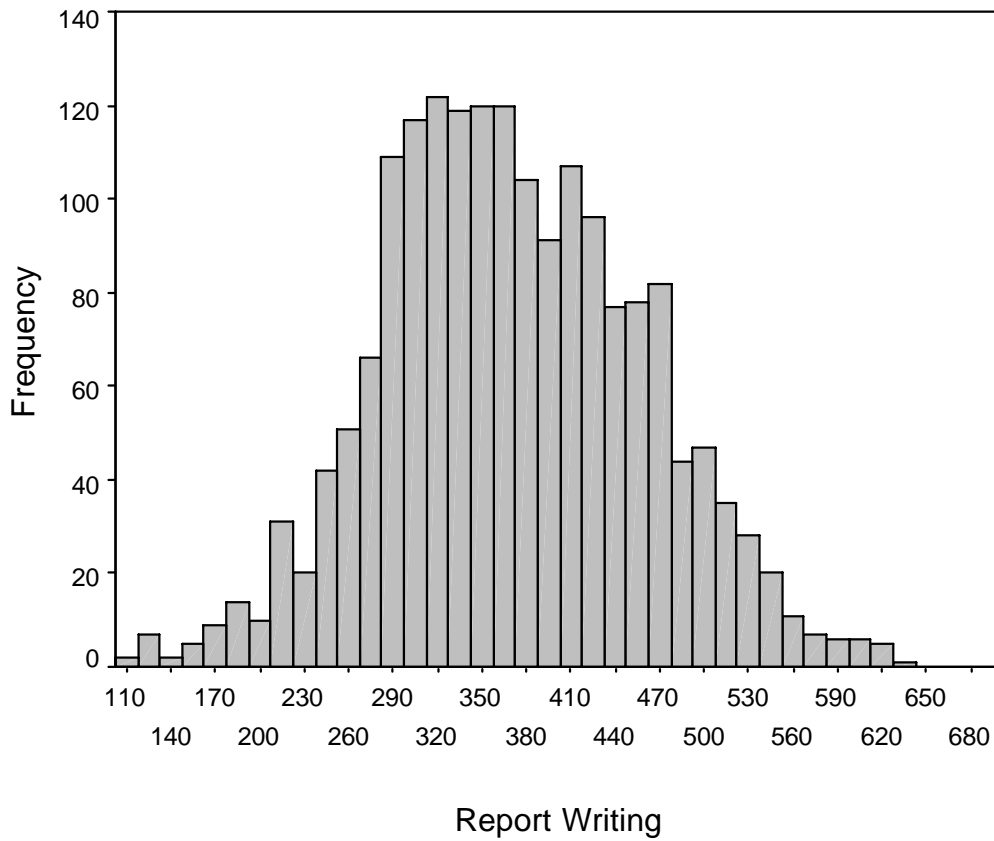
Report Writing

Table C4   GSA score data, GSA Entry 2001, Report Writing

	All students	Males	Females
Mean	369.61	363.42	374.58
SD	88.17	90.27	86.24
SE	2.07	3.21	2.70
Skewness	0.10	0.17	0.05
Kurtosis	– 0.12	–0.11	–0.11

Figure C5　　　GSA score frequencies, GSA Entry 2001, Argument Writing
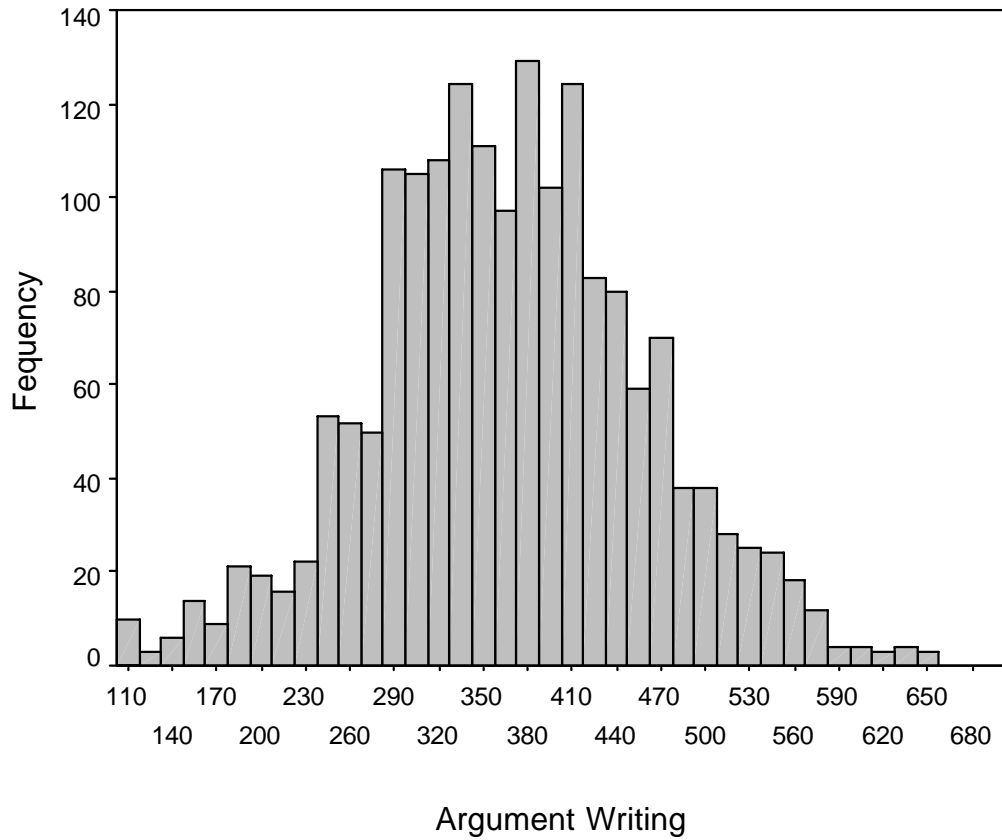
Argument Writing

Table C5　　　GSA score data, GSA Entry 2001, Argument Writing

	All students	Males	Females
Mean	366.68	359.16	372.48
SD	92.26	93.34	91.04
SE	2.19	3.36	2.88
Skewness	0.03	0.04	0.03
Kurtosis	0.14	−0.05	0.30

Appendix D
GSA/UAI correlations for trial test

Correlations were calculated between GSA scores and TERs/UAIs for students who agreed to their data being used for such a purpose. Seven of the ten universities participating in the trial test supplied ENTER/UAI information (range of scores 30–100, though mostly in the 60 to 100 range). For convenience, 20–30 students allowing their data to be used were chosen at random from each of the seven universities. The results are summarised below for all 199 students (Table D.1 and Table D.2).

In interpreting the results it must be remembered that students doing the trial test responded to relatively short linked forms that were as parallel as possible. Further, student scores on the GSA components have been correlated with student performance on the particular subjects they did in obtaining their TER/UAI (e.g. Engineering students probably had Mathematics and Physics in their TER/UAI subjects).

For the trial, though a report and an argument task were done, a single writing score was calculated.

Table D.1 indicates correlations between student score on GSA components and ENTER/UAI scores for Field of Study (FOS) groups (in the random sample) containing at least 10 students. This investigation needs to be repeated for larger groups doing the actual test but seems to contribute more evidence for the concurrent validity of the GSA. It would be expected that the GSA components having more relevance to particular subjects would correlate better with those subject performances, and this seems to be the case. For example, the correlations are statistically significant for Problem Solving for Science and Engineering groups, for Critical Thinking for Law, and for Writing and Critical Thinking for Arts. It must be remembered that these correlations refer to TER/UAI scores for the subjects that contributed to university entrance which are usually aligned with the subjects students choose to undertake at university. Clearly, some correlations for very small groups (e.g. Education) look unusual and need further investigation.

Table D1   Correlation between student GSA score and ENTER/UAI (all fields of study, trial test sample)

Component	Correlation of GSA score with UAI/TER for random sample (n = 199)
Writing	0.42
Problem solving	0.46
Critical thinking	0.46
Interpersonal	0.38
Sum of component scores	0.53

Table D2   Correlation between student score and ENTER/UAI by FOS
(trial test sample)

FOS	N	Correlation of GSA score with ENTER/UAI for random sample					Mean GSA score for all students in the FOS doing GSA trial			
		W	PS	CT	IP	Sum	W	PS	CT	IP
Arts	40	0.57	0.41	0.42	0.30	0.52	420	398	440	450
Business	45	0.55	0.37	0.47	0.45	0.53	354	367	372	369
Computer	21	0.49	0.29	0.47	0.46	0.52	339	397	377	367
Education	12	0.62	0.05	0.31	-0.13	0.20	369	371	383	394
Engineering	16	0.11	0.59	0.25	0.34	0.41	370	489	419	394
Science	33	0.24	0.57	0.23	0.25	0.50	375	421	412	420
Law	14	0.30	0.25	0.47	0.32	0.55	434	456	468	468

Table D2 indicates significant correlations between student performance on the trial test components and on the subjects that contributed to their ENTER/UAI scores. A significant correlation is to be expected, since TERs/UAIs have some predictive validity with respect to university and work performance. Thus, this finding of a significant correlation provides evidence for the concurrent validity for the GSA test.

Although the samples are small, and the issue needs more investigation and consideration, the results look promising. It would have been problematic had there been no relationship between GSA scores and TER/UAI success. More work is required with better data from the refined test, university assessments and, ultimately, workplace assessments.

Regression analysis could be employed to find the appropriate weighting of components to optimise GSA score correlation with subject performance as is done in the Victorian General Achievement Test.

Appendix E
Preliminary analysis of results for all students, trial and test

The following table provides middle 60 per cent ranges for all students in the trial and tests combined, with the exception that the report and argument ranges refer just to the Exit and Entry Test students. *N* in Table E1 refers just to those doing the multiple-choice components. *N* for the writing tasks is as indicated in Table 4 (and on average is about 20 per cent lower than for the multiple choice components as given in Table E1).

(In order to link the populations using the common items, the trial scores for each component were adjusted to a mean of 400 and test data were equated.)

Note that the 95 per cent confidence intervals of the mean as reported on the following pages are less than for the Entry Test because these data are generally for larger groups.

As more data are collected from better samples, the ranges and other parameters will be refined.

It is expected that separate Entry and Exit ranges will ultimately be produced for each FOS group.

The following ranges may be affected by differential participation rates in different FOS groups of students in various sub-groups (e.g. students with LOTE backgrounds).

Table E1   Means and middle 60 per cent ranges by Field of Study for all students, trial, GSA Exit 2000 and GSA Entry 2001

Field	N*	Report		Argument		Problem solving		Critical thinking		Interpersonal understandings	
		Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Arts/ Hum	611	404	339–472	419	333–499	385	302–481	439	361–509	454	374–528
Business/Com	992	361	286–434	345	264–427	369	277–462	368	281–448	373	286–455
Computer/IT	524	352	286–420	343	269–422	394	297–481	368	273–451	370	286–453
Ed/Social	262	377	313–445	383	313–451	347	277–425	372	299–439	406	322–476
Eng/Arch	355	370	286–454	359	285–423	444	343–530	391	299–479	389	304–468
Science/Math	966	384	311–458	377	307–442	418	330–503	412	334–487	412	339–477
Law/Legal	113	421	366–482	432	377–503	437	320–526	460	395–529	465	387–545
Med/Dent	368	413	344–480	416	346–484	459	381–524	447	385–502	456	391–516
Nursing	270	345	285–415	357	273–433	336	258–417	361	290–439	400	339–468
ND/Other	142	361	277–431	355	281–448	314	216–425	326	216–439	318	210–436
All Students	4603	378	304–354	374	300–453	394	297–481	396	310–479	403	322–491

E 1 Mean and standard error by Field of Study, all students

The following graphs (Figures E.1–E.5) give the mean for students in the trial and both tests in each Field of Study. Also shown are the 95 per cent confidence intervals.

N is given in Table 4 for writing and Table E1 for multiple-choice.

Figure E1   Mean by Field of Study, all students, Problem Solving

Figure E2   Mean by Field of Study, all students, Critical Thinking

Figure E3   Mean by Field of Study, all students, Interpersonal
              Understandings

Figure E4   Mean by Field of Study, all students, Report Writing

Figure E5   Mean by Field of Study, all students, Argument Writing
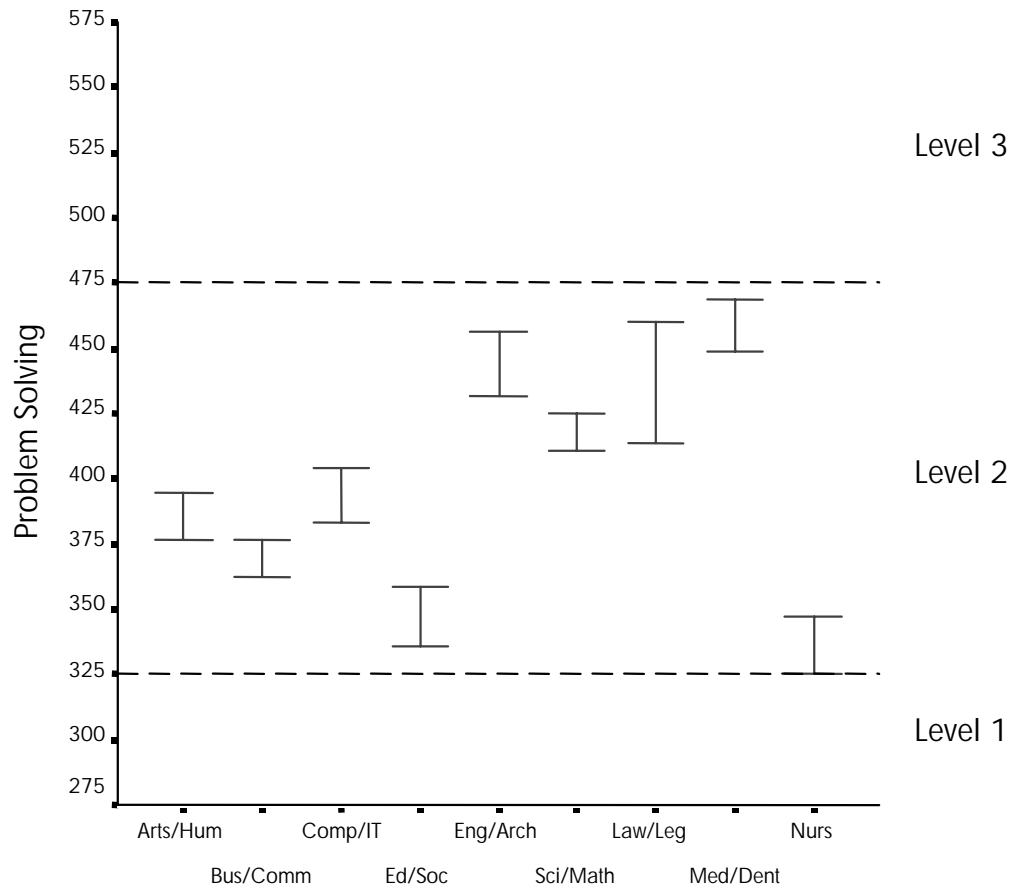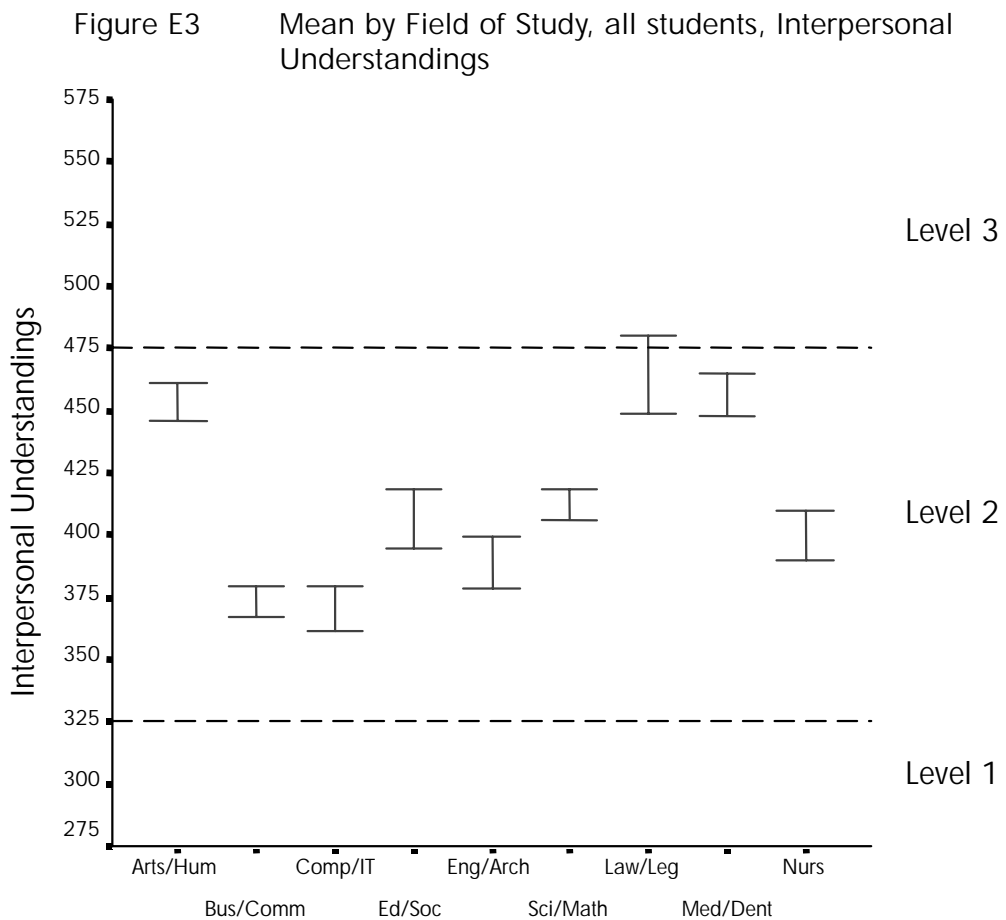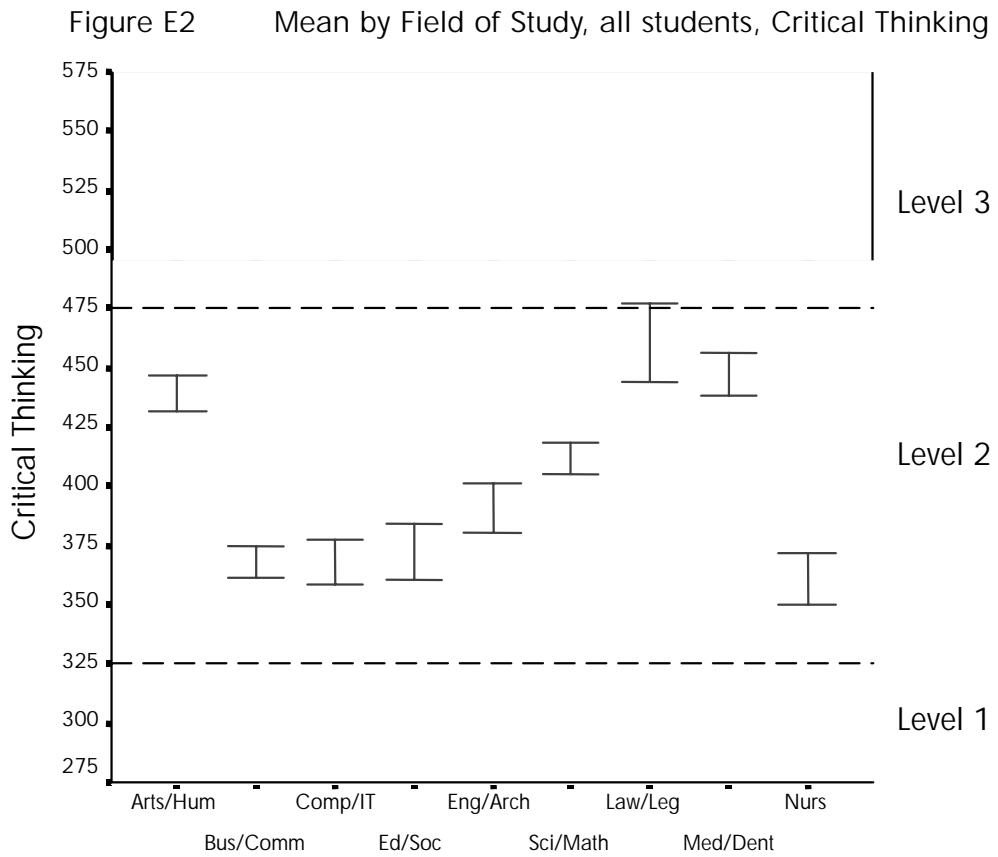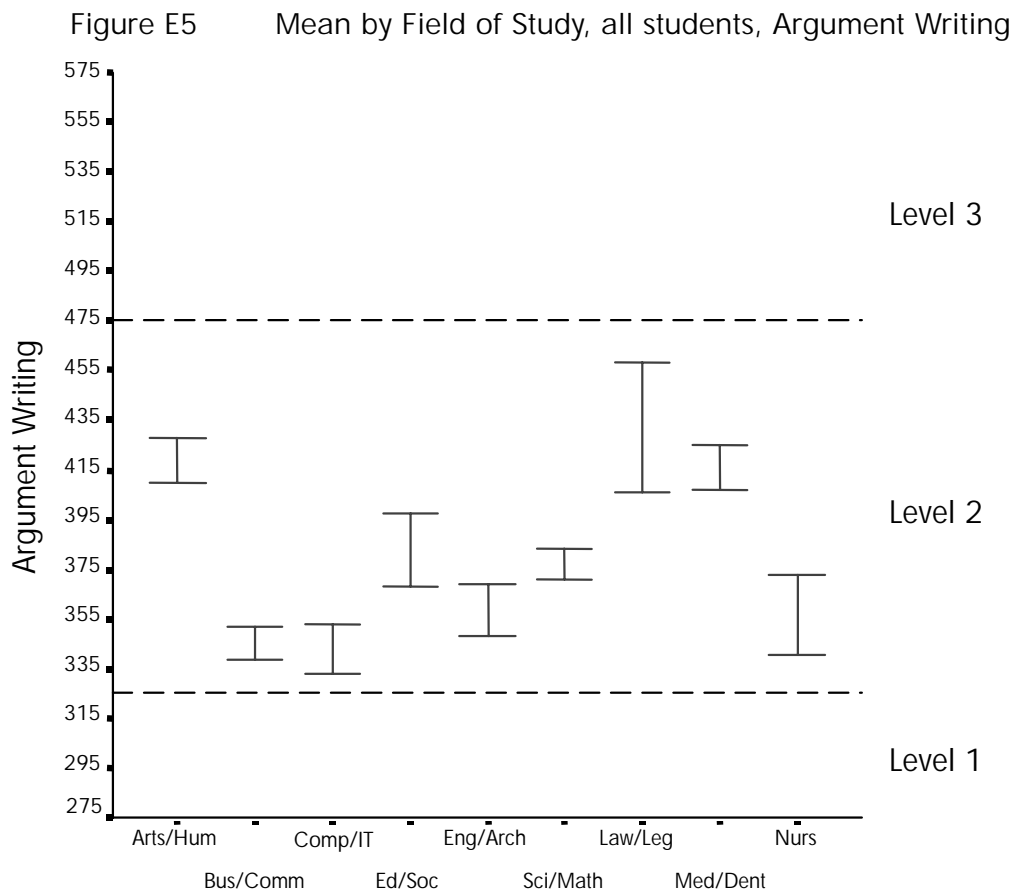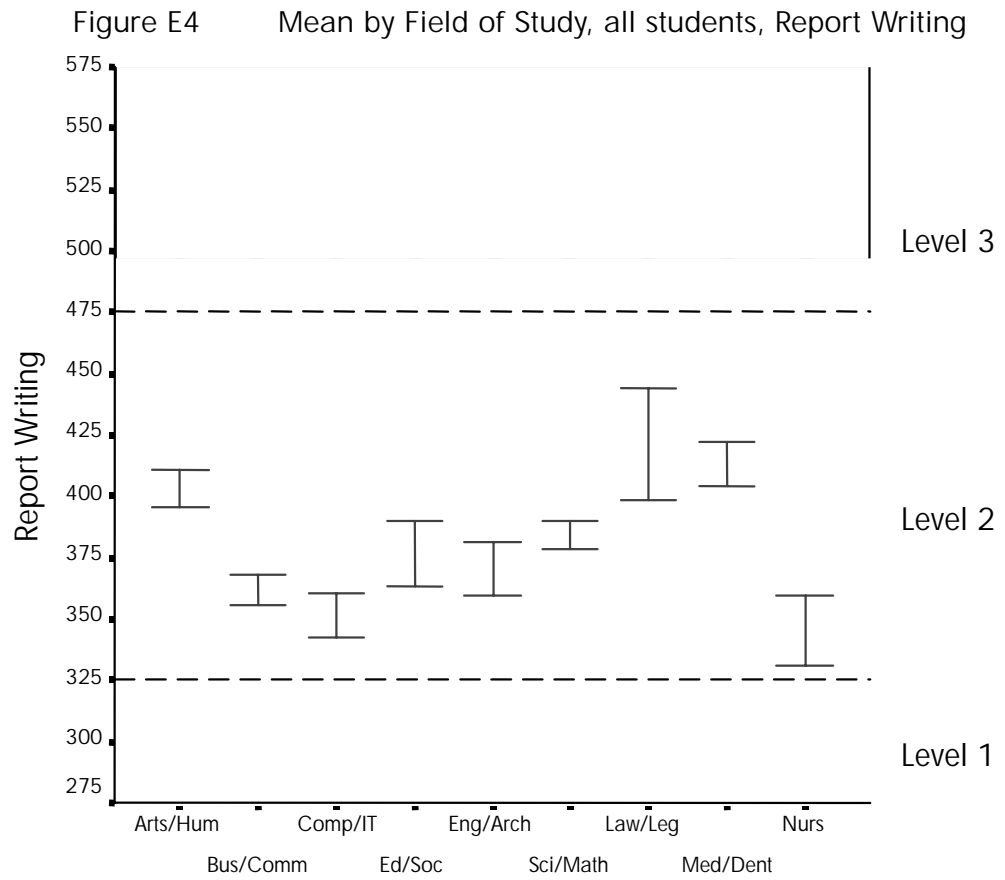
E 2 Inter-quartile ranges by Field of Study, all students

The following graphs (Figures E6–E.10) provide information on inter-quartile ranges for student populations in the trial and both tests. The box for each Field of Study gives the inter-quartile range. The line across the box is the median. The whiskers give the range of other scores up to a maximum of 1.5 inter-quartile distance. The asterisks give scores outside the whisker range.

N for writing is provided in Table 4 and in Table E1 for Multiple-Choice.

Figure E6   Inter-quartile ranges, all students, Problem Solving
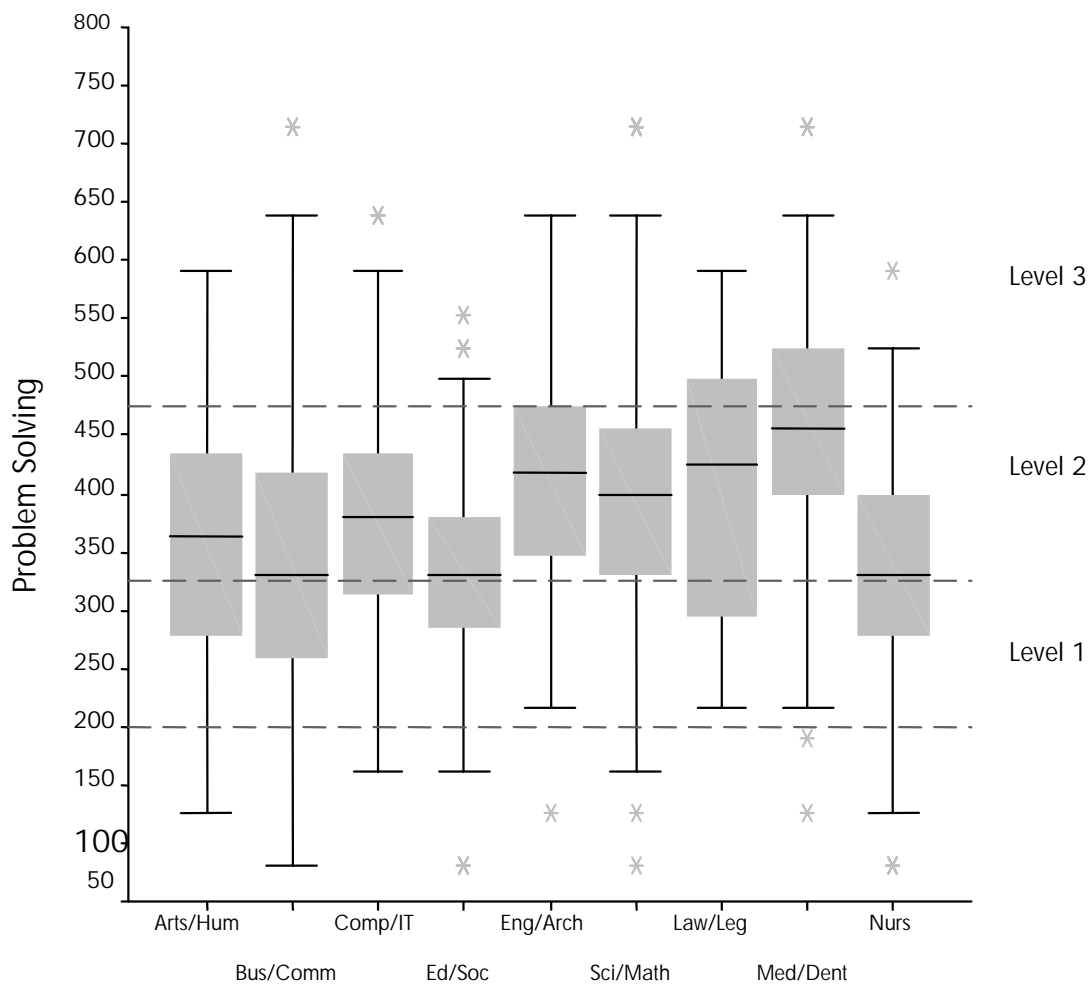
Figure E7   Inter-quartile ranges, all students, Critical Thinking
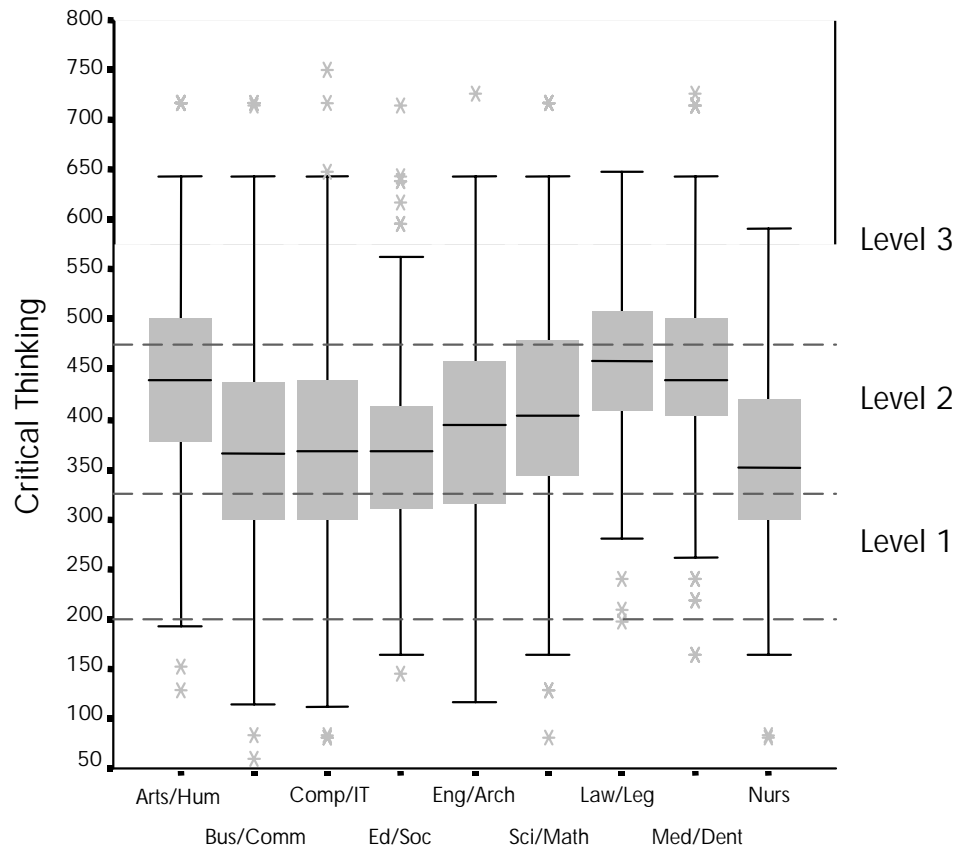
Figure E8   Inter-quartile ranges, all students, Interpersonal Understandings

Figure E9   Inter-quartile ranges, all students, Report Writing

Figure E10   Inter-quartile ranges, all students, Argument Writing

Appendix F GSA report
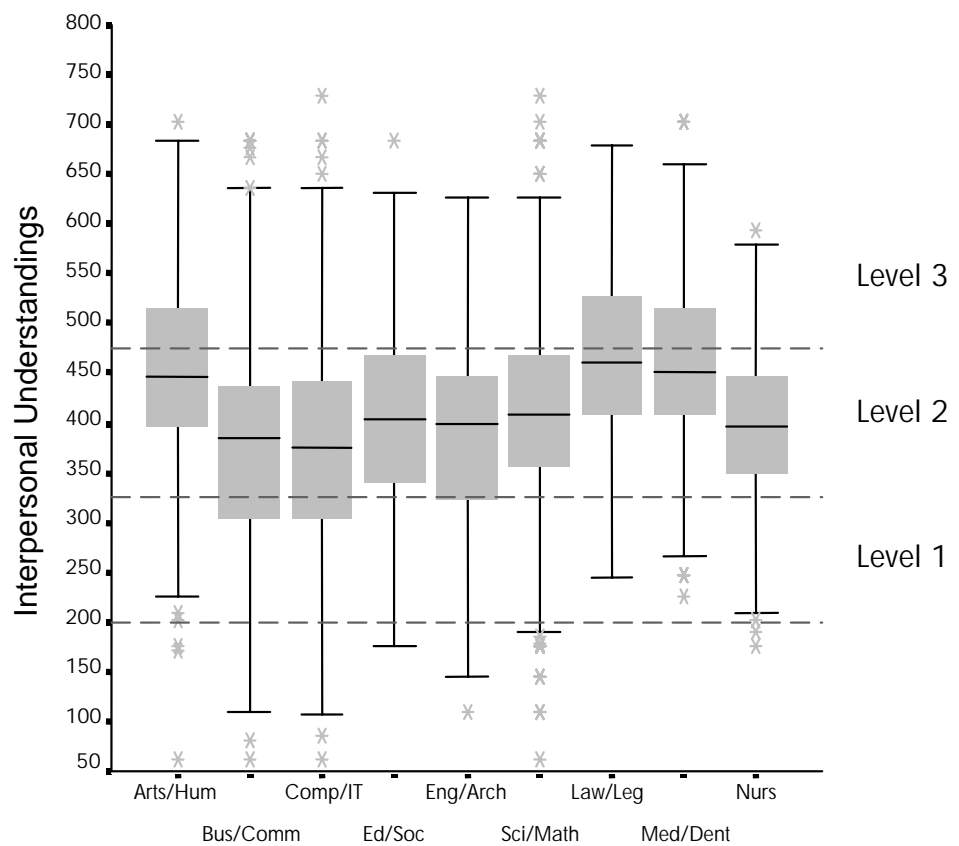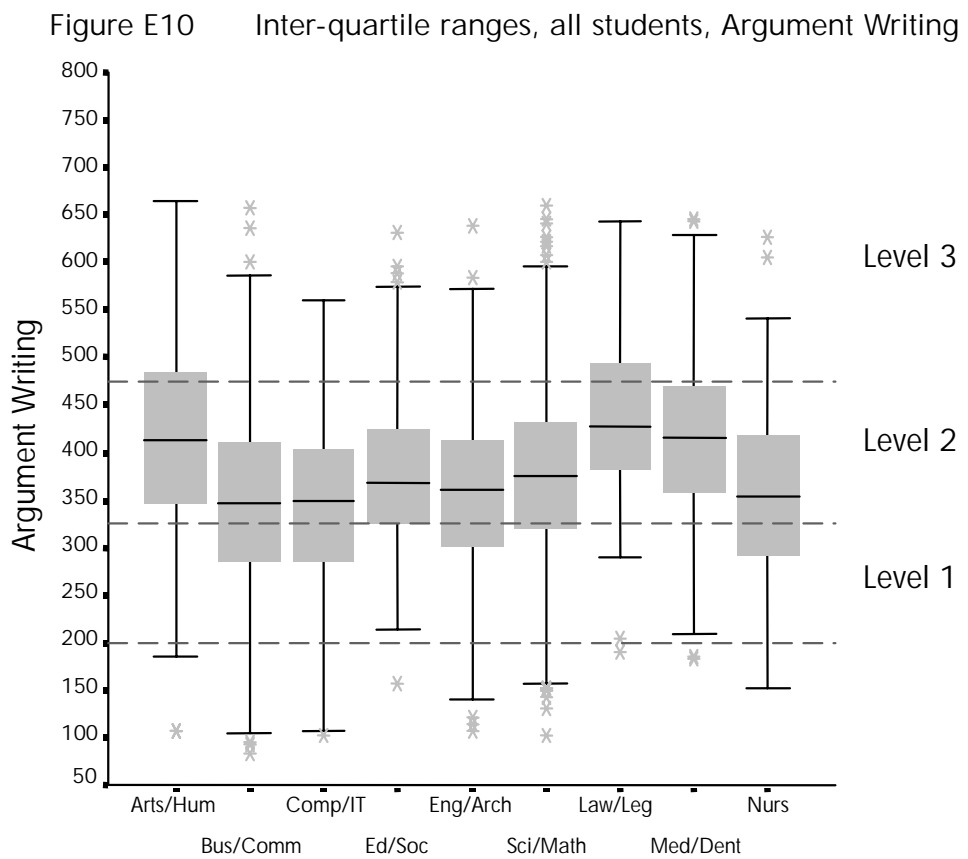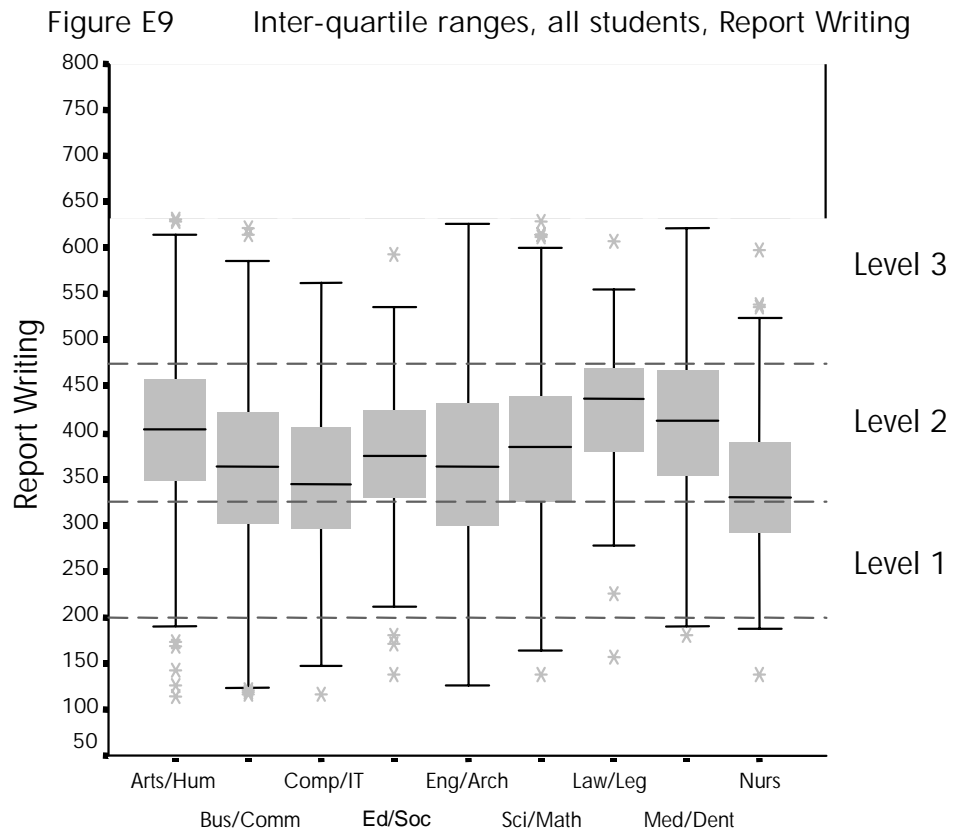
GRADUATE SKILLS ASSESSMENT
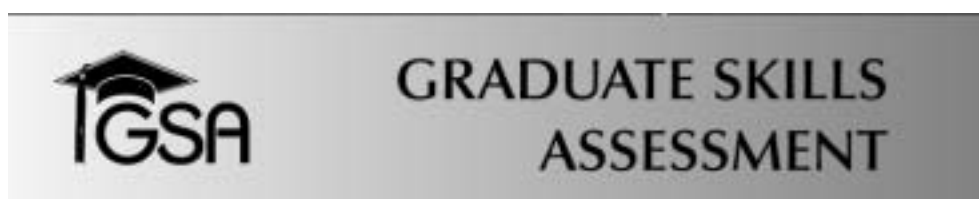
TEST REPORT

February / March 2001

Name: _____

ID Number: _____

Field of Study: _____

University: _____

Dear Student

The Graduate Skills Assessment (GSA) assesses student skills in the following areas:

- Report Writing
- Argument Writing
- Problem Solving
- Critical Thinking
- Interpersonal Understandings

Please refer to the information provided in this report and information bulletins for a description of the components.

Your result on each component is displayed in the format shown on the right. Inside this report, each of your results is indicated with a ■. The shading indicates the distribution of the results for the middle 60% of students from fields of study similar to yours (if such information was available). The dashed lines indicate the results of the middle 60% of all students in a general reference group.

Descriptions illustrating different levels of achievement are provided for each component.

The results in this report must be interpreted carefully, preferably in conjunction with other information.

A result may be missing if your Student ID Number was not clearly recorded for both parts of the test.

DESCRIPTORS

Higher levels of skill

e.g. Understands complex processes

400

Your result ⟶ ■

60% of students in similar fields of study scored in this range

300

e.g. Understands basic processes

Lower levels of skill   200
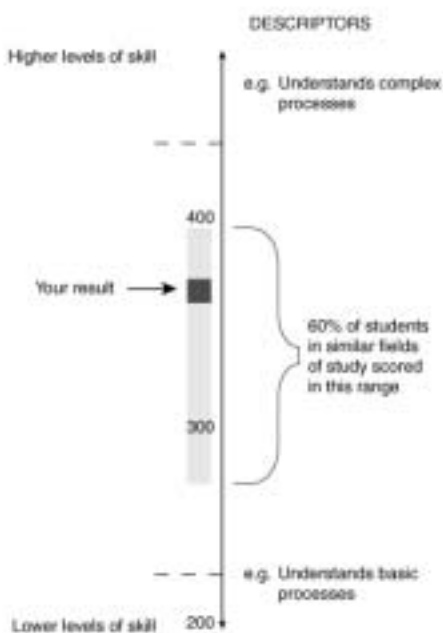
Graduate Skills Assessment

Listed below are the skills that are typically displayed by people at the given levels. A person at a given level is expected to display the skills at that level and below. Your result on each component is indicated by the ■

WRITTEN COMMUNICATION
(organisation, thought, language and expression)

Report Task   **Argument Task**

LEVEL 3 but greater than 600

600   600

LEVEL 3
- demonstrates insightful and critical understanding and analysis of ideas and issues
- organises, shapes and develops material effectively and coherently for the required purpose
- uses language precisely and fluently, with effective command of vocabulary, syntax and other linguistic conventions

500   500

LEVEL 2
- demonstrates sensible and reasoned understanding and analysis of major ideas and issues
- organises and develops material in a generally consistent and coherent manner for the required purpose
- uses clear expression that communicates with the reader, selecting vocabulary appropriately, and showing sound control of syntax and other linguistic conventions

400   400

300   300

LEVEL 1
- demonstrates basic or incomplete understanding of major ideas and issues
- organises and develops material in a basic or partial manner for the required purpose
- uses language simplistically or unevenly, with a limited range of vocabulary and some evident faults of expression and linguistic conventions

200   200

LEVEL 1 not reached or insufficient material attempted.

PROBLEM SOLVING
(analysis and evaluation of information, and application to problems)

LEVEL 3 but greater than 600

600   600

LEVEL 3
- analyses and categorises information in a systematic and insightful way to identify and make subtle inferences about problems involving complex patterns or relationships
- translates and synthesises complex data, and represents generalisations related to several variables in abstract form
- applies strategies to solve problems involving complex and abstract relationships and multiple steps and conditions, and evaluates solutions to such problems
- demonstrates sufficient numeracy skills to deal with non-standard, but non-specialist, prob

500   500

LEVEL 2
- analyses and categorises information in a logical way to identify and make reasonable inferences about problems involving standard patterns and relationships
- translates and reorganises data presented in standard form, and identifies relationships involving a few variables
- applies key information to solve well-defined problems requiring a small number of steps and few conditions, and evaluates solutions to such problems
- displays adequate numeracy skills to deal with standard, non-specialist problems

400   400

300   300

LEVEL 1
- analyses and categorises straightforward information to identify basic problems and make straightforward inferences
- translates and reorganises straightforward data, and identifies relationships involving two variables
- applies straightforward information to solve well-defined, one or two step problems, and evaluates solutions to such problems
- displays basic numeracy skills

200   200

LEVEL 1 not reached or insufficient material attempted.

49

CRITICAL THINKING

[comprehension, analysis and evaluation of viewpoints
presented in text]

LEVEL 3 but greater than 600

600

LEVEL 3

- comprehends complex and implicit meanings and
  relationships in text, and makes subtle and cogent
  inferences about these

- analyses text and uses inference to identify subtle
  or complex evidence, lines of reasoning, logical
  flaws, arguments, assumptions, consequences,
  rhetorical devices, analogies etc.

- evaluates credibility and validity of complex or
  subtle evidence, reasoning and argument implicit in
  text, generating appropriate criteria for evaluation if
500 required

LEVEL 2

- comprehends implicit meanings and relationships in
  text, and makes reasonable inferences about these

- analyses text and uses inference to identify
  moderately complex evidence, lines of reasoning,
400 logical flaws, arguments, assumptions,
  consequences, rhetorical devices, analogies etc.

- evaluates credibility and validity of moderately
  complex evidence, reasoning and argument that is
  explicit or implicit in text, where criteria for evaluation
  can be inferred

300 LEVEL 1

- comprehends explicit meanings and relationships in
  text, and makes straightforward inferences about these

- analyses text to identify straightforward or elementary
  evidence, lines of reasoning, logical flaws, arguments,
  assumptions, consequences, rhetorical devices,
  analogies etc

- evaluates credibility and validity of straightforward
  evidence, reasoning and argument, where criteria for
  evaluation are fairly explicit

200

LEVEL 1 not reached or insufficient material attempted.

INTERPERSONAL UNDERSTANDINGS

[analysis of work and general social situations]

LEVEL 3 but greater than 600

600

LEVEL 3

- demonstrates sophisticated insight into, and makes
  subtle inferences about, roles, relationships,
  behaviours, feelings, attitudes and motives

- demonstrates subtle insight into aspects of effective
  teamwork, leadership, negotiation and
  communication

- recognises potentially appropriate actions or
  responses to delicate or complex interpersonal
500 problems

LEVEL 2

- demonstrates significant insight into, and makes
  reasonable inferences about, roles, relationships,
  behaviours, feelings, attitudes and motives

- demonstrates significant insight into aspects of
400 effective teamwork, leadership, negotiation and
  communication

- recognises potentially appropriate actions or
  responses to interpersonal problems that may not
  be familiar

300 LEVEL 1

- demonstrates basic insight into, and makes
  reasonable inferences about, familiar roles,
  relationships, behaviours, feelings, attitudes and
  motives

- demonstrates basic insight into aspects of effective
  teamwork, leadership, negotiation and
  communication

- recognises potentially appropriate actions or
  responses to straightforward interpersonal
  problems

200

LEVEL 1 not reached or insufficient material attempted.

Component Descriptions

Written Communication

The Written Communication component involves two tasks – a Reporting task and an Argument task. Each task is assessed on:

- Language and Expression (e.g. control of language conventions, clarity and effectiveness of expression)
- Organisation (e.g. effectiveness and purposefulness of organisation)
- Thought (depth of analysis of issues or information)

Problem Solving

The Problem Solving component focuses on the abilities of students to interpret information and apply it to problems that are generally accessible and applicable.

The following aspects of problem solving are addressed:

- Identify, Comprehend, Restate the problem
- Identify and Analyse information relevant to the problem
- Translate and Represent features of the problem
- Reorganise, Synthesise and Apply information relevant to the problem
- Conceptualise/Generate/Identify problem solution
- Evaluate solution strategies and their outcomes

Critical Thinking

Students are asked to comprehend, analyse and evaluate statements and passages that present viewpoints of the kind they would come across in the real world.

The material in GSA Critical Thinking can be categorised as follows:

- Comprehension in order to identify meaning and point of view
- Analysis in order to identify lines of reasoning, evidence, conclusions, arguments, assumptions, logical flaws, consequences, rhetorical devices, analogies, etc.
- Evaluation in order to judge the credibility and validity of evidence, lines of reasoning, conclusions, arguments, etc.

Interpersonal Understandings

Interpersonal Understandings material in the GSA focuses on the ability of students to:

- Show insight into the feelings, motivation and behaviour of other people, and into issues related to working with or helping others
- Recognise how such insight may be applied in order to effectively work with or help others, including effective negotiation, communication, teamwork and leadership