

so, in universities. An awareness of these problems is obligatory on those who prepare students for transition to university work. Awareness alone is of course not sufficient but needs to be accompanied by a continued increase in the academic expertise available through the whole education system. There is no ultimate fundamental reason why that community service provided by universities should not reflect back into the earlier years of the education system in such a way that the transition from school to university is a continuous one. But if the present, and often traumatic, discontinuity is to be removed for the bulk of transition students there will have to emerge the will to do so. It will not just go away. There are signs that some schools are really trying to maximise their academic expertise and are encouraging students in how and what to

learn rather than relying on teaching *flat*. This is to be commended because in the words of the 1974 O.E.C.D. Examiners' Report "the future of the universities depends more upon the quality of the next generation than of the present one".⁸

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THE DIFFICULTY LEVEL OF ESSAYS WRITTEN BY UNIVERSITY ENTRANTS

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The apparent inability of many Australian university students to write good English has been isolated as a factor contributing to student failure. Ramson and Inglis [1966] have given an account of the 1965 and 1966 projects at the Australian National University to test university entrants on written expression. Of 879 students tested in 1965, 220 students were graded as satisfactory and 380 students as needing some help through lectures and recommended reading. The balance, amounting to 279 or nearly one-third of the students, were found to need remedial teaching through workshop-tutorials. In some cases, these students appeared to be unable to write adequate sentences, let alone structure paragraphs or whole essays.

The problem, apparently, is not confined to the Australian situation. Kirkman [1966] points out that "it is the exception rather than the rule to find a young engineer or scientist who can write plainly and readably, on specialist or general topics", and the *New Scientist* [1966] reports that "Professors have lately made sad complaint that 90 per cent of our young engineers and scientists are incapable of expressing themselves clearly and concisely on paper". Many tilts are also made at the lack of literacy of Arts undergraduates in universities and colleges of advanced education. However, although many of these claims can be consensually validated in staff conversation, they are based on subjective impressions rather than hard data.

In view of the continuing concern for the quality of written expression in the universities, and the likely deleterious effect of poor expression on academic performance, then, the present writers undertook an investigation into the complexity or difficulty level of the written expression of 273 entrants to the University of New England through an examination of the readability scores obtained from essays written by the students during orientation week.

Although readability *per se* is not the most critical aspect of written expression for tertiary students, it is surely a very basic one. Concepts, theories, arguments, discourse—any written assignment activity—depends to some degree on the student's ability to communicate his thinking. Readability of such material may be a significant variable in

assessment outcomes. Material that is too facile or too complex may be considered inappropriate in terms of the expectations tutors and lecturers place on the assignments received from tertiary students.

As far as the writers know, objective methods are seldom used for analysing written material in terms of ascertaining the maturity of style or the overall level of difficulty of expression. More often, global assessments are made. These can be highly subjective. It is suggested that one way in which it might be possible to effect a less subjective analysis is to use the Flesch readability scale as an index of the level at which students are functioning in their written expression. In this way, readability can be viewed separately from content or informational level.

Readability measures have been applied extensively to provide quantitative, objective estimates of the difficulty of style and comprehension of prose [Klare, 1963]. But, as far as the writers are aware, measures of readability have not previously been used to assess the level of difficulty at which tertiary students write in their essays. It was felt that such a procedure had distinct advantages over more subjective estimates of the level of difficulty of written expression insofar as use of the Flesch scale [1948] permits precise, objective quantification. However, it was realized that the Flesch scale does impose several constraints in that the technique does not take into account factors in written expression such as misspellings and errors in grammatical construction and punctuation—all of which probably influence persons reading written material to a greater or lesser degree. The most severe criticism of the technique, doubtless, as of most attempts at objective assessments of essays (e.g., computer analysis—Birnie), is that prime consideration is not given to intelligibility of general informational content, of ideas, and themes. However, in the absence of a procedure which could cover most eventualities, it was felt that a worthwhile exploration analysis of one aspect—readability—could yield results of some value to the overall problem of written assignments.

ASSUMPTIONS:

Because of the greater demands made on students in the Arts-type Faculties for written assignments, it was felt that the study should try to ascertain

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whether any real differences in difficulty level exist between university entrants in the various Faculties. Furthermore, in view of the theory that female students are usually superior to male students on verbal fluency and reading ability, it was felt that a sex difference could well exist in the difficulty level of written expression. In line with the findings of Ramson and Inglis, it was also assumed that, while a wide range in difficulty scores would be found, students would be clustered in the easier, less complex, more immature regions of the scale.

HYPOTHESES:

On the basis of these assumptions the following null hypotheses were formulated:

1. There is no range in the difficulty level of essays written by university students.
2. The distribution of difficulty scores is not skewed.
3. There is no difference in the difficulty scores of students from various Faculties.
4. There is no difference in the difficulty scores of male and female university entrants.

PROCEDURE:

Two hundred and seventy-three students from the Faculties of Arts, Science, Agricultural Economics and Rural Science were set an essay on a general topic (Myself in Twenty Years Time) during the

regular orientation week testing programme undertaken by the Educational Research Unit of The University of New England. The time allowed for this written exercise was one hour. The Flesch Reading Ease Formula (R.E.) was applied to determine the reading difficulty of each essay. The R.E. score was obtained by selecting a sample of 100 words starting from the beginning of the third paragraph in each script, counting the number of syllables, calculating the average sentence length in words, and applying the appropriate equation.* The Flesch formula gives scores which range from 0, which is so difficult as to be practically unreadable, to 100, which is easy reading for any person with a reading age beyond fourth grade standard. The seven gradations used by Flesch are presented. Comments on style, the typical magazine equivalent, and the approximate schooling required to read at that level are included to assist with the interpretation of the scores. It is assumed [after Kellogg Hunt, 1965] that passages which are more difficult to read denote a more complex, mature style. Hence the readability scores can be taken as a general index of the level of difficulty at which students are writing.

RESULTS AND DISCUSSION:

The range of difficulty level of all the essays examined is shown in Table 1, together with Flesch's interpretation of the scores.

TABLE 1

Difficulty Level of Essays Written by University Entrants

Readability Score	Style	Typical Magazine	School Grade Equivalent	READING DIFFICULTY					
				Male		Female		Total	
				No.	%	No.	%	No.	%
0-30	Very difficult	Scientific	College	7	4.2	2	1.8	9	3.3
30-50	Difficult	Academic	High School or some College	31	18.8	4	3.7	35	12.8
50-60	Fairly difficult	Quality	Some High School	42	25.5	27	25.0	69	12.3
60-70	Standard	Digests	7th or 8th Grade	41	24.9	33	30.6	74	27.1
70-80	Fairly easy	Slick fiction	6th Grade	37	22.4	34	31.5	71	26.0
80-90	Easy	Pulp fiction	5th Grade	7	4.2	8	7.4	15	5.5
90-100	Very easy	Comics	4th Grade	—	—	—	—	—	—
TOTAL				165	100	108	100	273	100

This study has shown that there is a wide range in the difficulty level of essays written by university students. It can be seen from Table 1 that only 44, or 16.1% of the students wrote with a style at the maturity grade level equivalent of "High School to College". The bulk of the students (214 or 78.4%) wrote at a level ranging from "6th Grade to some High School". A small number of students (15 or 5.5%) wrote at a very elementary

(4th-5th Grade) level. This distribution was sufficient, however, to enable Hypothesis 1 to be rejected. The mean and median were calculated for the readability levels of students and showed a negatively skewed distribution thereby enabling Hypothesis 2 to be rejected. This suggests that the majority of students are writing at the easy/very easy end of the difficulty level scale rather than at the more complex end of the scale.

TABLE 2
Summary of Difficulty Level Scores by Faculty

Readability Score	ARTS				SCIENCE					
	Male		Female		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-30	2	5.0	1	1.4	8	13.3	1	3.2	9	9.9
30-50	3	7.5	2	2.9	13	21.7	7	22.6	20	21.9
50-60	9	22.5	15	21.4	19	31.7	8	25.8	27	29.7
60-70	16	40.0	25	35.8	15	25.0	12	38.7	27	29.7
70-80	10	25.0	22	31.4	5	8.3	3	9.7	8	8.8
80-90	—	—	5	7.1	—	—	—	—	—	—
90-100	—	—	—	—	—	—	—	—	—	—
TOTAL	40	100	70	100	60	100	31	100	91	100

Readability Score	AGRICULTURAL ECONOMICS				RURAL SCIENCE					
	Male		Female		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-50	3	12.0	—	—	2	5.0	1	20.0	3	6.7
30-50	7	28.0	—	—	13	32.5	1	20.0	14	31.1
50-80	7	28.0	2	100	13	32.5	3	60.0	16	35.5
60-70	3	12.0	—	—	3	7.5	—	—	3	6.7
70-80	4	16.0	—	—	8	20.0	—	—	8	17.8
80-90	1	4.0	—	—	1	2.5	—	—	1	2.2
90-100	—	—	—	—	—	—	—	—	—	—
TOTAL	25	100	2	100	40	100	5	100	45	100

Table 2 presents the summary of difficulty scores by Faculty. Variation in the difficulty level of essays written by students in the Faculties of Arts, Science, Agricultural Economics and Rural Science can readily be discerned. The range of difficulty was greater in the Faculties of Agricultural Economics and Rural Science than in Arts and Science (see Table 3).

TABLE 3

Comparison of Difficulty Level Scores by Faculty*

Style	Agricultural Economics				Rural Science	Total
	Arts	Science	Econom.	Science		
Difficult —	—	—	—	—	—	—
V. difficult	8	9	10	17	44	
Fairly difficult —	—	—	—	—	—	
Standard	65	37	12	19	143	
Fairly easy —	—	—	—	—	—	
Very easy	37	35	5	9	86	
TOTAL	110	91	27	45	273	

*Figures in each cell represent number of students
X² = 34.09, df = 9
p < .001

The value of X² for Faculty comparisons (X² = 34.09) was significant at the .001 level of confidence, thereby enabling Hypothesis 3 to be rejected.

Finally, the difference between the difficulty scores of males and females was compared.

TABLE 4

Comparison of Difficulty Level Scores by Sex*

Style	Male	Female	Total
Difficult —	—	—	—
V. Difficult	38	6	44
Fairly difficult —	—	—	—
Standard	83	60	143
Fairly easy	—	—	—
Very easy	44	42	86
TOTAL	165	108	273

*Figures in each cell represent number of students
X² = 15.83, df = 4
p < .01

The value of X² was significant at the .01 level of confidence which is interpreted as negating Hypothesis 4. On the whole, the males performed at a higher level than the females. It is difficult to reconcile this finding in view of the fact that it is generally accepted that females have greater verbal ability than males [Silcock, 1965]. Perhaps factors inherent in university selection procedures, in the written task, in previous schooling experiences (e.g., independent vs. public) may have contributed to this unexpected result. But it may also, of course, have been a function of the way the Flesch scale works. Table 1 shows that high difficulty writing is typically found in scientific journals which, given the preponderance of males in science oriented courses, might be expected to be more familiar to males than to females and hence, in some measure, to account for the differ-

ences found here. It may well be that there is inherent bias in the kind of writing which scores highly according to the Flesch formula.

The study, then, has suggested variability across Faculties and between the sexes in readability levels of written essays. In addition, it has suggested that few tertiary students in the present sample wrote at a very complex or a very simplistic level.

The range in readability was such, however, as to suggest that further exploration may be warranted, e.g., to try to relate level of reading ability to assignment marks and examination performance. In this way more of the subjective elements which inhere in global assessments may be unearthed—by the use of objective criteria—so that focussed action or remediation is possible.

In response to precisely this problem, Monash University in 1974 made a one-year experimental appointment of a Remedial English Adviser to the University. The appointment was made at the instigation of students, student advisory services and staff; initially, it was envisaged that the Adviser would function:

... to help students with any academic problems arising from the use of English in their studies; to break down barriers of a linguistic nature between academic staff and students; and to enquire into the extent, nature and immediate causes of English disability in the University with a view to developing the most efficient remedies.

[Taylor, 1974]

In fact, the task was well nigh impossible for a single individual, given the size of the University and the undoubted magnitude of the problem. As the report of the first year's operation points out quite clearly and unequivocally, "The hole in the dyke is already too big for one fist to plug". [Taylor, 1974].

*Flesch's Reading Ease equation is $R.E. = 206.835 - .846 w + 1.015 sl$ where w is the number of syllables per 100 words and sl is the average number of words per sentence.

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THE BUCK STOPS HERE

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H. G. Wells is reputed to have said that human history was rapidly becoming a race between education and catastrophe.

It is not a reassuring thought. The opponents are not evenly matched. The forces of chaos are strong and they are multiplying, while education continues to bumble and fumble.

In my view, the Wellsian assertion constitutes a modern truism and is hence not open to serious challenge. Western civilization and even perhaps mankind faces inevitable catastrophe in the absence of radical changes in value orientations. Without such changes the point of no return will surely pass and then the decay process will gradually accelerate till no-one will be able to deny the approaching end whether it be with a bang or a whimper.

It is not my intention in this paper to re-state and discuss the major conservationist, social-reformist arguments or to canvass the opposing points of view. My concern is with the purposes, processes and organization of education. Major shifts in normative values occur as part of social evolution, but these are not orchestrated changes directed to serve specific ends. If catastrophe is to be avoided, and it should be noted that it is not only catastrophe as a result of the major breakdown of eco-systems or through exhaustion of natural resources, but also catastrophe as a direct consequence of the breakdown of social systems due at least in part to the endemic conditions of poverty, ignorance, famine, disease, etc., which rule the lives of the majority of the world's population, then education must play the central role. Further it is my contention that universities must accept an increasing proportion of the blame if education continues to be in its present state of chronic and acute mess.

Education in Australia is in a mess. It is also probably true that the same can be said of any other nation. In Australia, all who are in any way connected with the institutionalized rituals of education, primary through to tertiary, pupils, parents, teachers, administrators, policy makers, politicians are dissatisfied with what presently obtains. They all see the present as a transitional state which hopefully will be replaced by what is bigger, better, more efficient and what have you. Of course there are those who insist on going through life with their eyes firmly glued to rear-vision mirrors and these evaluate the present as a transient aberration and call for a prompt return to the old veridical values and modes.

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A manifestation of the wide-spread dissatisfaction with the state of education is the commonly encountered phenomenon of blame-transference or buck-passing.

The Academics' lines: First year students can't read, or spell, or write, they can't add or subtract or multiply or divide, they are inarticulate and don't even know the basics of science. They are an apathetic, unmannerly, soggy rabble. What the hell have the high schools been doing with them for the last six years?

The Secondary Schools' chorus: Those bloody professors in their ivory towers, expecting us to do their work—have a look at the syllabi, why, I didn't do some of this stuff till I was in the final year of my degree! And another thing, what the hell do the kids do in primary schools—many of them can't even read or spell or do their number work, when they come to us. They don't know what it is to study, all they know is play.

The Primaries' Plaint—The Infants Lament: New stuff every year—the New Maths, Social Science, Foreign Languages, Science, creativity and aesthetics, the play-way to learning, discovery learning, language training, drama and oracy—good solid theoretical stuff born in ivory towers. The high schools are expecting us to do their work for them. Besides look at the pupils we get, just kids, can't even blow their own noses, mollycoddled by families and pre-schools. What's gone wrong with families, don't they teach their children anything any more? We are increasingly being asked to take on a pure parental function as well as try to cope with formal work.

As counterpoint to the blame-transference melody we have a choral line which uses the government as scapegoat. Give us all the money, buildings, staff, equipment, smaller classes, better trained personnel, freedom, exclusiveness, etc. and the millennium will dawn. Things are not as they should be because you have deprived us, starved us.

To complete this cacophonous chorus it may be as well to note that the consumers of the product of the universities have something to say too. The employers complain about the ill-prepared graduates in urgent need of retraining in specific areas. They complain of incompetence and apathy, illiteracy and inarticulateness as well as delusions of grandeur. Within the universities' post-graduate institutes, schools and faculties report, as a common experience, graduate students who appear to have developed high levels of examination passing skills without having been contaminated by any germs of