

Summary Statistics on Tertiary Entrance Examination Papers, 2000

Candidates

The number of students who sat one or more Tertiary Entrance Examinations increased slightly from 11959 in 1999 to 11986 in 2000. Slightly fewer examinations were sat (54461 in 2000 compared with 54972 in 1999), reflecting the trend for individual students to sit slightly fewer subjects.

The following comments on specific TEE subjects and their examinations are based on statistics presented in Table 4.11.

There were substantial increases (greater than 10 percent) in the proportions of candidates who sat the TEE in Ancient History, Discrete Mathematics, Drama Studies, Geology, German, Indonesian: Advanced and Information Systems. Drama Studies and Information Systems are relatively new subjects and are still growing, but Political and Legal Studies (commenced in 1997) appears to have stopped increasing in popularity. Indonesian: Advanced, which had about 250 candidates from 1996-1997, then about 100 in 1998-1999, had 224 candidates in 2000. This increase coincides with the introduction to the Western Australian education system of the first cohort of students from an Indonesian school, Bina Nusantara High School.

Conspicuous decreases (less than 10 percent) were observed in Chinese: Advanced, Chinese: Second Language, English Literature, Japanese: Second Language and Modern Greek. There were only 5 candidates for Modern Greek, and all of these were in Year 11.

Level of difficulty

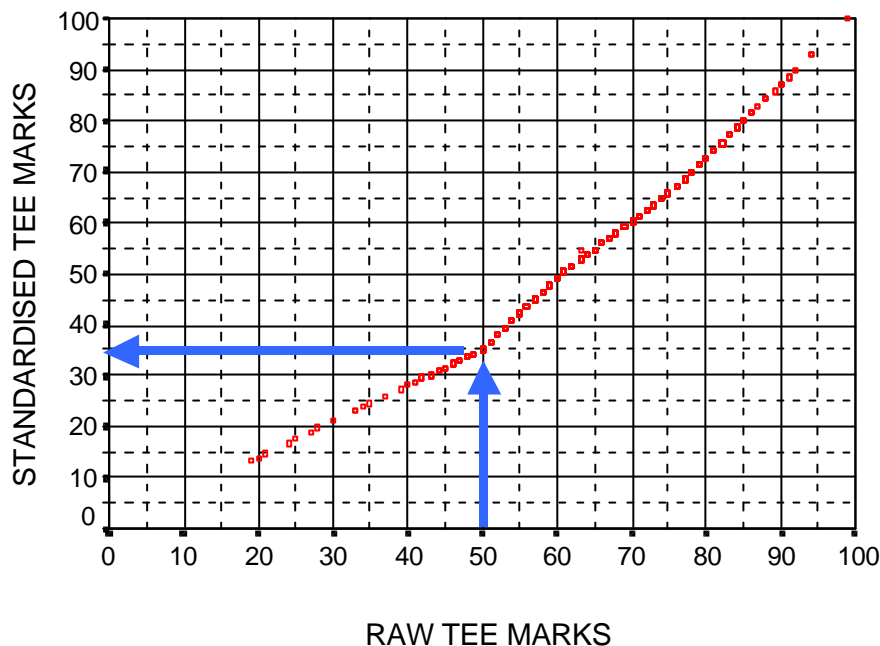
TEE examiners are asked to set examinations which will result in mean raw marks of 55–60 percent. Thirteen examining panels (14 in 1999) achieved the desired level of difficulty. The only examinations with a mean mark below 50 percent was Drama Studies, where the standards-referenced marking principles put the mean mark beyond the control of the examiners. Three subjects had comparatively easy papers with mean marks above 65: ESL, German and Malay: Advanced. In German, the high abundance of background speakers tends to give the impression that the examination is easier than it is. However, examiners of the other subjects will be asked to make their papers for 2001 slightly more difficult. One of the two papers imported from other states, Modern Greek, was comparatively easy with a mean of 74.87 (75.06 in 2000).

Raw TEE marks are subjected to standardisation, which adjusts them to the same distribution in every subject. Thus, if examiners do not achieve a mean mark in the desired range (55–60), candidates who sit the examination to the best of their ability experience no disadvantage. However, their raw examination marks may be adjusted by a considerable amount during standardisation, and as a result these candidates may experience some disappointment.

In the example (below) the relationship between raw TEE marks and standardised TEE marks is shown as a graph made up of red points. A point on this line at 50 on the scale of raw marks corresponds to a reading of 35 on the scale of standardised marks. Some students of Malay: Advanced were surprised to find that their marks dropped greatly in post-examination processing; it is clear that much of this drop was due to standardisation. Large marks adjustments like this can entail staff at the Curriculum Council in lengthy counselling interviews or correspondence.

MALAY: ADVANCED

An Example Where Marks Are Too High



Full Use of the Marking Scale

Examiners are expected to make full use of the marking scale. A restricted range of marks increases the risk of mis-ranking candidates. In 13 subjects (12 in 1999) the marks spanned 90 or more percentage points, and in a further 7 subjects the range was 80–89. The subjects with a range less than 80 were Biology, Drama Studies, Geology, Music, Physical Science and a number of LOTE subjects, namely: Chinese: Advanced, Chinese: Second Language, German, Indonesian: Advanced, Italian and Malay: Advanced. In addition, the two imported examinations, Japanese: Advanced and Modern Greek, suffered from a restricted range of marks.

Reliability

Overall, the reliabilities of all of the examinations were high in 2000, considering that they were untrials tests. They ranged from 0.73 to 0.97 (0.74 to 0.92 in 1999). Conspicuous increases were seen in Art and Malay: Advanced, and conspicuous decreases were seen in English Literature, Indonesian: Advanced and Music. These changes did not coincide with any changes in syllabus or examination format, and therefore reflect the success of the examiners in ranking candidates.

Concurrent evidence for validity

These figures are the correlations between TEE marks and school marks (after adjustment to a common scale). They represent the extent to which the two measures—the external assessment and the internal assessment—measure the same construct. If the TEE measures something markedly different from what teachers measure with their assessments, the correlation will be substantially lower than 1.00.

It can be seen in the table that the correlations between school-based marks and the TEE are generally high (overlooking Chinese: Second Language which has a very low enrolment and the advanced LOTE subjects where the statistics are complicated by dual language usage). An overall judgment that the TEE assessed the same achievements as the school-based assessments would seem reasonable.

Notes on the table which follows

On the following page is a table which displays statistical data relating to the effectiveness of the 2000 Tertiary Entrance Examinations as assessment instruments for the purpose of university entrance. Statistics in parentheses are for the 1999 papers, and are included for comparison. The notes provided below should be read in conjunction with the table.

Since these statistics are intended to allow the reader to evaluate the TEE papers, rather than the candidates, summary statistics for papers set in other states (ie Japanese: Advanced and Modern Greek) relate to the total candidature rather than to Western Australian candidates alone. For these examinations some of the summary statistics are unavailable because only a limited set of marks was available to the Curriculum Council. The number of candidates, however, refers only to candidates in WA.

Column 2: The **number of candidates** in WA in 2000 (1999 in parentheses).

Column 3: The **mean** is the average percentage score achieved by candidates on the paper and acts as a rough measure of difficulty. Examining panels are instructed by the Curriculum Council to try to set a paper with a mean in the range 55-60. When the mean is outside this range, standardisation may change students' marks considerably.

Column 4: The **range** is one plus the difference between the maximum and minimum percentage scores achieved by candidates. It is a measure of the spread of scores and use of the measurement scale. Examining panels are instructed to try to use the full measurement scale of 1 to 99 as this allows greater discrimination between students.

Column 5: The **reliability** indicates how internally consistent the examination is. A high reliability is needed for candidates to be ranked accurately. A perfectly reliable examination would be completely free of errors of measurement and would produce the same candidate scores each time it was set and marked. A perfectly reliable examination would have all items measuring in the same dimension and would result in a reliability of 1.0.

Where papers allow students a choice of questions between sections, or throughout the entire paper, it is not appropriate to calculate the reliability. The reliability is given for the paper as a whole and for the multiple-choice section where appropriate.

Column 6: The Pearson correlation coefficient between the standardised examination marks and the standardised moderated school assessments measures the concurrent evidence for validity of the paper. A perfectly linear relationship between candidates' standardised examination marks and standardised moderated school assessments would result in a correlation of 1.0 and would indicate that the examination measured the same achievements as were assessed in class by teachers.

Table 4.11 Summary Statistics on Tertiary Entrance Examination Papers, 2000 (1999 statistics in parentheses)

SUBJECT	No. of Candidates		MEAN (%)		RANGE		RELIABILITY		CONCURRENT VALIDITY			
							M-C	TOTAL				
Accounting	1176	(1278)	58.25	(58.44)	97	(98)		0.93	(0.91)	0.89	(0.89)	
Ancient History	303	(254)	64.27	(58.11)	80	(88)		N/A	(NA)	0.83	(0.83)	
Applicable Mathematics	4783	(4787)	63.55	(60.58)	100	(100)		0.92	(0.92)	0.91	(0.91)	
Art	1085	(1091)	53.74	(55.35)	98	(90)		0.97	(0.80)	0.83	(0.83)	
Biology	1965	(2037)	53.99	(56.66)	77	(82)	0.93	(0.95)	0.82	(0.87)	0.87	(0.89)
Calculus	1886	(1957)	55.07	(58.30)	98	(97)		0.92	(0.92)	0.91	(0.91)	
Chemistry	3623	(3674)	56.58	(61.73)	96	(88)	0.97	(0.97)	0.88	(0.89)	0.92	(0.92)
Chinese: Advanced	70	(109)	56.76	(59.46)	78	(73)		0.84	(0.81)	0.78	(0.87)	
Chinese: Second Language	14	(20)	59.57	(72.55)	43	(41)		0.73	(0.86)	0.62	(0.75)	
Discrete Mathematics	6695	(6240)	60.45	(58.80)	94	(90)		0.89	(0.86)	0.87	(0.86)	
Drama Studies	922	(643)	48.67	(52.21)	78	(91)		0.84	(0.90)	0.78	(0.76)	
Economics	2980	(3014)	55.53	(60.14)	97	(92)	0.68	(0.67)	0.74	(0.74)	0.89	(0.88)
English	8019	(7748)	57.18	(51.86)	98	(101)		0.75	(0.79)	0.72	(0.74)	
ESL	748	(726)	66.98	(61.53)	81	(80)	0.71	(0.75)	0.79	(0.81)	0.82	(0.88)
English Literature	2641	(2940)	60.73	(60.50)	98	(98)		0.75	(0.88)	0.78	(0.78)	
French	335	(334)	58.37	(57.63)	85	(78)		0.90	(0.91)	0.94	(0.93)	
Geography	3949	(4254)	53.94	(54.84)	92	(91)	0.49	(0.75)	0.74	(0.75)	0.83	(0.83)
Geology	68	(56)	55.32	(55.18)	63	(71)	0.96	(0.92)	0.87	(0.91)	0.83	(0.83)
German	150	(106)	66.31	(63.16)	79	(84)		0.87	(0.90)	0.94	(0.91)	
History	2856	(2852)	59.30	(59.50)	93	(92)		0.91	(0.90)	0.77	(0.77)	
Human Biology	3905	(3871)	57.50	(65.23)	81	(80)	0.95	(0.94)	0.79	(0.83)	0.88	(0.89)
Indonesian: Advanced	224	(104)	56.21	(55.30)	66	(70)	0.45	(0.62)	0.73	(0.89)	0.78	(0.88)
Indonesian: Second Language	112	(104)	59.92	(55.55)	85	(68)		0.87	(0.86)	0.91	(0.93)	
Information Systems	679	(488)	51.25	(55.32)	84	(92)		0.79	(0.81)	0.84	(0.78)	
Italian	197	(220)	60.53	(60.43)	75	(89)		0.88	(0.80)	0.92	(0.92)	
Japanese: Advanced	7	(7)	59.68	(61.46)	47	(79)		NA	(NA)	0.95	(0.32)	
Japanese: Second Language	282	(327)	52.88	(62.61)	88	(89)		0.91	(0.86)	0.92	(0.94)	
Malay: Advanced	87	(90)	65.06	(63.14)	72	(42)		0.87	(0.75)	0.75	(0.78)	
Modern Greek	5	(12)	74.87	(75.06)	67	(53)		NA	(NA)	0.95	(0.84)	
Music	322	(350)	64.76	(64.13)	78	(76)		0.71	(0.82)	0.91	(0.92)	
Physical Science	268	(265)	56.13	(58.46)	73	(71)	0.94	(0.93)	0.90	(0.88)	0.91	(0.88)
Physics	3237	(3307)	62.43	(57.48)	96	(88)		0.91	(0.91)	0.91	(0.90)	
Political & Legal Studies	868	(914)	52.79	(53.25)	91	(88)		0.87	(0.87)	0.88	(0.85)	