VALIDITY STUDIES ON METU-EPE

(ENGLISH PROFICIENCY EXAM) 2009 – JUNE

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We looked at two types of validity for the METU-EPE 2009: 1) predictive validity and 2) construct validity.

PREDICTIVE VALIDITY

For the Predictive Power**,** the EPE grades of 1.701 DBE (Department of Basic English) students successful in June 2009 were compared with their first term GPA (Grand Point Average, English 101 grades included). This was done in 2 ways.

The Pearson Product Moment correlation coefficients (r) were computed. The r for ALL FACULTIES was .47 significant at 0.01 level. For this and the other r's for different faculties, please refer to the Tables 1 through 6.

Table 1. All Faculties - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,462
	N	1701	1701
GPA	Pearson Correlation	,462	1,000
	N	1701	1701

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

Table 2. Faculty of Architecture - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,405
	N	128	128
GPA	Pearson Correlation	,405	1,000
	N	128	128

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

Table 3. Faculty of Arts and Sciences - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,418
	N	322	322
GPA	Pearson Correlation	,418	1,000
	N	322	322

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

Table 4. Faculty of Economic and Administrative Sciences - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,405
	N	260	260
GPA	Pearson Correlation	,405	1,000
	N	260	260

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

Table 5. Faculty of Education - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,398
	N	155	155
GPA	Pearson Correlation	,398	1,000
	N	155	155

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

Table 6. Faculty of Engineering - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,481
	N	836	836
GPA	Pearson Correlation	,481	1,000
	N	836	836

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

In simple terms, correlation means 'go-togetherness' of two or more sets of data or variables; in this case, academic attainment in the departments and level of proficiency in English as measured by EPE. It should also be noted that the r's are not to be interpreted as percentages of commonality between the two

variables. For this, we must square the r, the result of which is called the coefficient of determination.

The r's reported in Tables 1 through 6 are consistent with the values obtained in our earlier studies and concur with validity indices cited in the literature, indicating a fairly high level of predictive validity for the June METU-EPE.

The second procedure to check the predictive validity involved comparing the EPE grades in intervals of 5 points with the same students' GPA's at intervals of 0.50 out of 4.00, as shown in Tables 7 through

Table 7. All Faculties – EPE-GPA Intervals

ALL FACULT.	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	2	1		1		2 (100%)				
94,50 - 90,00	47	21	9	9	5	44 (94%)	2	1		
89,50 - 85,00	125	38	34	26	19	117 (94%)	8			
84,50 - 80,00	179	29	46	50	32	157 (88%)	16	6		
79,50 - 75,00	267	23	50	72	71	216 (81%)	40	11		
74,50 - 70,00	300	17	53	88	61	219 (73%)	57	24		
69,50 - 65,00	365	7	36	80	83	206 (56%)	103	56		
64,50 - 59,00	416	5	28	77	107	217 (52%)	126	73		
TOTAL	1701	141	256	403	378	1178 (69%)	352	171		

Table 8. Faculty of Architecture – EPE-GPA Intervals

ARCH	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	1				1	1 (100%)				
94,50 - 90,00	4	1		1	1	3 (75%)		1		
89,50 - 85,00	9		5	4		9 (100%)				
84,50 - 80,00	15	1	7	6	1	15 (100%)				
79,50 - 75,00	21	3	2	10	5	20 (95%)	1			
74,50 - 70,00	20		5	10	2	17 (85%)	3			
69,50 - 65,00	22		1	8	4	13 (59%)	8	1		
64,50 - 59,00	36		3	10	10	23 (64%)	11	2		
TOTAL	128	5	23	50	23	101 (79%)	23	4		

Table 9. Faculty of Arts and Sciences – EPE-GPA Intervals

ARTS-SCIENC	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	7	5			1	**6 (86%)**		1		
89,50 - 85,00	15	2	6	4	2	**14 (93%)**	1			
84,50 - 80,00	22	5	1	9	5	**20 (91%)**	2			
79,50 - 75,00	37	2	8	9	10	**29 (78%)**	4	4		
74,50 - 70,00	69	5	12	25	11	**53 (77%)**	9	7		
69,50 - 65,00	70		9	17	17	**43 (61%)**	20	7		
64,50 - 59,00	102	2	5	21	26	**54 (53%)**	29	19		
TOTAL	322	21	41	86	71	**219 (68%)**	65	38		

Table 10. Faculty of Economic and Administrative Sciences – EPE-GPA Intervals

ADMIN	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	1						1			
89,50 - 85,00	13	2	2	6	3	**13 (100%)**				
84,50 - 80,00	30	3	8	9	8	**28 (93%)**	2			
79,50 - 75,00	46	4	5	11	17	**37 (80%)**	6	3		
74,50 - 70,00	50		5	12	16	**33 (66%)**	10	7		
69,50 - 65,00	59	2	4	6	18	**30 (51%)**	16	13		
64,50 - 59,00	61		3	12	16	**31 (51%)**	19	11		
TOTAL	260	11	27	56	78	**172 (66%)**	54	34		

Table 11. Faculty of Education – EPE-GPA Intervals

EDU	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	2			1	1	**2 (100%)**				
89,50 - 85,00	4	2	1	1		**4 (100%)**				
84,50 - 80,00	6	2	1	2		**5 (83%)**		1		
79,50 - 75,00	9		2	1	4	**7 (78%)**	2			
74,50 - 70,00	17	1	3	6	4	**14 (82%)**	3			
69,50 - 65,00	44		6	8	9	**23 (52%)**	15	6		
64,50 - 59,00	73		2	13	21	**36 (49%)**	23	14		
TOTAL	155	5	15	32	39	**91 (59%)**	43	21		

Table 12. Faculty of Engineering – EPE-GPA Intervals

ENG	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	1	1				1 (100%)				
94,50 - 90,00	33	15	9	6	3	33 (100%)				
89,50 - 85,00	84	32	20	11	14	77 (92%)	7			
84,50 - 80,00	106	17	30	24	18	89 (84%)	13	4		
79,50 - 75,00	154	14	33	42	34	123 (80%)	27	4		
74,50 - 70,00	144	11	28	35	28	102 (71%)	32	10		
69,50 - 65,00	170	5	16	41	35	97 (57%)	44	29		
64,50 - 59,00	144	3	15	21	34	73 (51%)	44	27		
TOTAL	836	98	151	180	166	595 (71%)	167	74		

The gray-shaded column (4.00 – 2.00) in the Tables above displays the total numbers and percentages of the students considered successful at the end of their first term in the freshman year (2.00 – 4.00). The percentages clearly show a descending trend from 100 % down to 52.2 % for All Faculties. In other words, as the English Proficiency level goes down, so does the level of academic success measured by the GPA. Sharp drops are observable between EPE 84.5 – 80.00, 79.50 – 75.00 and especially between 74.50 – 70.00 and 69.50 -65.00 (from 73 % to 52.2 %), signaling that a cut off value of 70/100 might be ideal, at least, for some departments.

Some warnings or reservations are well in place if we want to be more confident of the link between academic success and English proficiency level (as measured by GPA and EPE, respectively).

In the computations carried out, the ENG 101 course grades were embedded in the students' GPA's. Extracting the ENG 101 grades from the GPA's might yield somewhat different results.

The values reported so far are all based on the students who were educated in the Department of Basic English. As a further study, it is also worth looking at academic achievement levels of those students who passed the 2009 September EPE and did not study in the Department of Basic English.

In addition, the same study should be conducted on the graduate students to investigate the role of English in their first term in their respective programs.

Finally, studies in the related literature seem to indicate that the role of the proficiency level in the language of instruction might be more pronounced in the initial stages of degree programs. Another study quite worthwhile might be to investigate this link just before graduation, taking both earlier EPE grade(s) and grades obtained in the English courses taken as part of the departmental curriculum.

Still another study under consideration is a qualitative one in nature to collect data regarding test-takers' perceptions on the validity and reliability of EPE and their attitudes towards the test in general. We plan to conduct this research with a limited sample of students in October 2010.

CONSTRUCT VALIDITY

Considering the fact that the curriculum in the DBE is typically focused on English for academic purposes (EAP) and the ENG 101 syllabus serves the same objectives at a higher level, it is only natural that METU-EPE is intended to tap the level of EAP of test-takers to report their level of readiness to undertake their academic studies in the Departments.

We can then assume that as far as the variety of English goes, there should be some common ground between EPE and ENG 101. The same computational procedures were executed to investigate the degree of co-variance and answer the question: to what extent do these two variables measure the same construct, proficiency level in EAP?

The overall r in the Table 13 is 68.2. The r's in other Faculties vary between .60 and .70, as shown in Tables 13 through 18.

Table 13. All Faculties - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,683
	N	1701	1701
ENG101	Pearson Correlation	,683	1,000
	N	1701	1701

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

Table 14. Faculty of Architecture - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,769
	N	128	128
GPA	Pearson Correlation	,405	,621
	N	128	128
ENG101	Pearson Correlation	,769	1,000
	N	128	128

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

Table 15. Faculty of Arts and Sciences - Correlation between EPE and ENG101

Correlations			
		EPE	ENG101
EPE	Pearson Correlation	1,000	,606
	N	322	322
ENG101	Pearson Correlation	,606	1,000
	N	322	322

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

Table 16. Faculty of Economic and Administrative Sciences - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,595
	N	260	260
ENG101	Pearson Correlation	,595	1,000
	N	260	260

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

Table 17. Faculty of Education - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,589
	N	155	155
ENG101	Pearson Correlation	,589	1,000
	N	155	155

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

Table 18. Faculty of Engineering - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,708
	N	836	836
ENG101	Pearson Correlation	,708	1,000
	N	836	836

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

These values are quite high, but not exceedingly so. This is also understandable. The ENG 101 is a four-hour a week course with a total of 56 contact hours. Besides, course grades obtained may be subject to factors not directly measurable by exams.

Tables 19 through 24 displaying EPE grades (at intervals of 5 pts) and ENG 101 grades (0.49 – 4.00) display a similar trend: the higher the EPE grade, the higher the ENG 101 grade.

Table 19. All Faculties – EPE-ENG101 Intervals

ALL FACULT.	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	2	2				2 (100%)				
94,50 - 90,00	51	47	3	1		51 (100%)				
89,50 - 85,00	125	121	3	1		125 (100%)				
84,50 - 80,00	179	103	43	20	10	176 (98%)	2	1		
79,50 - 75,00	267	81	100	63	15	259 (97%)	5	2	1	
74,50 - 70,00	300	60	75	76	54	265 (88%)	20	10	3	2
69,50 - 65,00	365	36	59	92	82	269 (74%)	55	27	7	7
64,50 - 59,00	412	12	47	78	114	251 (61%)	79	53	23	6
TOTAL	1701	462	330	331	275	1398 (82%)	161	93	34	15

Table 20. Faculty of Architecture – EPE-ENG101 Intervals

ARCH	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	1	1				1 (100%)				
94,50 - 90,00	4	4				4 (100%)				
89,50 - 85,00	9	8	1			9 (100%				
84,50 - 80,00	16	8	4	3		15 (94%)	1			
79,50 - 75,00	20	7	5	5	2	19 (95%)	1			
74,50 - 70,00	20	2	5	7	5	19 (95%)		1		
69,50 - 65,00	22	1	2	6	5	14 (64%)	4	3	1	
64,50 - 59,00	36		4	2	9	15 (42%)	9	9	3	
TOTAL	128	31	21	23	21	96 (75%)	15	13	4	

Table 21. Faculty of Arts and Sciences – EPE-ENG101 Intervals

ARTS-SCIENC	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	7	7				7 (100%)				
89,50 - 85,00	15	15				15 (100%)				
84,50 - 80,00	22	12	5		5	22 (100%)				
79,50 - 75,00	37	8	12	12	2	34 (92%)	2	1		
74,50 - 70,00	69	16	15	16	15	62 (90%)	4	1	1	1
69,50 - 65,00	70	9	12	19	15	55 (79%)	11	3	1	
64,50 - 59,00	102	4	15	19	24	62 (61%)	20	10	8	2
TOTAL	322	71	59	66	61	257 (80%)	37	15	10	3

Table 22. Faculty of Economic and Administrative Sciences – EPE-ENG101 Intervals

ADMIN	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	1	1				1 (100%)				
89,50 - 85,00	13	12	1			13 (100%)				
84,50 - 80,00	30	16	9	4	1	30 (100%)				
79,50 - 75,00	46	14	17	12	3	46 (100%)				
74,50 - 70,00	50	9	14	12	7	42 (84%)	6	1		1
69,50 - 65,00	59	8	9	14	12	43 (73%)	10	3	1	2
64,50 - 59,00	61	3	9	12	17	41 (67%)	11	5	4	
TOTAL	260	63	59	54	40	216 (83%)	27	9	5	3

Table 23. Faculty of Education – EPE-ENG101 Intervals

EDU	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00										
94,50 - 90,00	2	2				2 (100%)				
89,50 - 85,00	4	4				4 (100%)				
84,50 - 80,00	6	4	1	1		6 (100%)				
79,50 - 75,00	9	1	1	6	1	9 (100%)				
74,50 - 70,00	17	4	4	3	2	13 (76%)	2	2		
69,50 - 65,00	44	5	4	9	12	30 (68%)	8	3	2	1
64,50 - 59,00	73		3	18	23	44 (60%)	14	10	5	
TOTAL	155	20	13	37	38	108 (70%)	24	15	7	1

Table 24. Faculty of Engineering – EPE-ENG101 Intervals

ENG	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	1	1				1 (100%)				
94,50 - 90,00	33	33				33 (100%)				
89,50 - 85,00	84	82	1	1		84 (100%)				
84,50 - 80,00	106	63	24	12	4	103 (97%)	2	1		
79,50 - 75,00	154	51	65	28	7	151 (98%)	1	1	1	
74,50 - 70,00	144	29	36	38	26	129 (90%)	8	5	2	
69,50 - 65,00	170	13	32	44	38	127 (75%)	22	15	2	4
64,50 - 59,00	144	5	16	27	41	89 (62%)	27	19	5	4
TOTAL	836	277	174	150	116	717 (86%)	60	41	10	8

Additional Study

An effort was made to check similar statistics with the group of students who were successful in September, 2009 EPE and thus did not study in DBE (Non-DBE).

The construct validity index − i.e., the relationship between the EPE grades and the ENG101 term grades − is quite satisfactory and consistent with the figures reported earlier (r: .684). (See Table 25 and 26)

Table 25. Those who passed EPE September 2009 - Correlation between EPE and ENG101

		EPE	ENG101
EPE	Pearson Correlation	1,000	,684
	N	281	281
ENG101	Pearson Correlation	,684	1,000
	N	281	281

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

Table 26. Those who passed EPE September 2009 - EPE - ENG101 Intervals

ALL FACUL.	ENG101	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	6	6				6 (100%)				
94,50 - 90,00	29	29				29 (100%)				
89,50 - 85,00	62	59			2	61 (98%)			1	
84,50 - 80,00	47	30	10	1	2	43 (91%)	3		1	
79,50 - 75,00	40	11	13	8	4	36 (90%)	3	1		
74,50 - 70,00	29	6	8	7	3	24 (83%)	3	1		1
69,50 - 65,00	31	3	4	8	6	21 (68%)	5	3	1	1
64,50 - 59,00	37	1	10	8	9	28 (76%)	6	1		2
TOTAL	281	145	45	32	26	248 (88%)	20	6	3	4

However, the link between the EPE scores and the first-term GPA's is quite low this time (r: .165) (See Table 27 and 28). Since we see 4 different populations (n: 281; n: 386; n: 315; n: 248), the data may be contaminated in this case. We know that students who have scored 85 and over in EPE are automatically exempted from ENG101 and receive a term grade of AA. We need to repeat such studies in the future with Non-DBE students and compare academic success performance of DBE graduates and Non-DBE graduates.

Table 27. Those who passed EPE September 2009 - Correlation between EPE and GPA

		EPE	GPA
EPE	Pearson Correlation	1,000	,165
	N	386	386
GPA	Pearson Correlation	,165	1,000
	N	386	386

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

Table 28. Those who passed EPE September 2009 - EPE-GPA Intervals

ALL DEPT.	GPA	4,00 - 3,50	3,49 - 3,00	2,99 - 2,50	2,49 - 2,00	4,00 - 2,00	1,99 - 1,50	1,49 - 1,00	0,99 - 0,50	0,49 - 0,00
EPE	TOTAL									
100,00 - 95,00	7	3	2	2		7 (100%)				
94,50 - 90,00	32	9	9	2	4	24 (75%)	5	2		1
89,50 - 85,00	67	22	8	13	13	56 (84%)	8	2		1
84,50 - 80,00	61	15	14	12	13	54 (89%)	4	2		1
79,50 - 75,00	57	9	10	18	9	46 (81%)	4	5		2
74,50 - 70,00	53	8	11	16	9	44 (83%)	5	1	1	2
69,50 - 65,00	54	3	17	16	7	43 (80%)	5	6		
64,50 - 59,00	55	3	13	12	13	41 (75%)	4	8	2	
TOTAL	386	72	84	91	68	315 (82%)	35	26	3	7

SOME COMMENTS on RELIABILITY

The commonly held view in the testing circles is that there can be no validity without reliability.

The fact that the larger part of METU-EPE (70%) is composed of multiple choice items skillfully created and crafted enhances the overall reliability of the test. Item analysis procedures are regularly carried out to maintain the quality of items.

The alpha Cronbach coefficients for Stage I, consisting of 70 items vary between .84 and .91. (.88 for the June 2009 version). The 40-item multiple choice Listening Section in Stage II produces reliability estimates between .80 and .85 (.84 for the June 2009 version).

We regularly and randomly try to check the inter-rater reliability in the Writing Section. We usually obtain values between .75 and .80, which are well within the acceptable range. However, this is by no means a guarantee that we have overcome reliability concerns with the testing of writing. This is dynamic process demanding constant endeavor and vigilance.