

Table 1

Mean and Standard Deviation for Pre and Posttest Measures by Instruction, Sex, and Grade

Group	<i>n</i>	Reading		WRAT3 Spelling		Arithmetic		GALT		Watson-Glaser	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction											
Study Skills											
Pre	28	93.75	15.08	95.61	11.37	91.36	12.13	4.63	2.90	<i>a</i>	<i>a</i>
Post	23	98.48	14.05	96.91	12.94	96.17	14.58	4.29	3.02	39.00	8.83
No Study Skills											
Pre	26	95.68	11.92	96.62	12.57	91.23	9.88	3.23	1.95	<i>a</i>	<i>a</i>
Post	20	95.95	13.45	96.75	13.53	91.75	11.77	3.50	2.52	38.10	7.06
Prior Chess											
Pre	24	90.61	12.13	88.25	12.70	89.17	10.66	2.65	2.55	<i>a</i>	<i>a</i>
Post	20	90.89	11.80	89.00	13.86	86.60	11.90	2.32	1.83	33.86	7.32

Group	<i>n</i>	<u>Reading</u>		<u>WRAT3 Spelling</u>		<u>Arithmetic</u>		<u>GALT</u>		<u>Watson-Glaser</u>	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total-Combined Classes											
Pre	78	93.43	13.21	93.68	12.58	90.64	10.87	3.55	2.60	<i>a</i>	<i>a</i>
Post	63	95.34	13.37	94.35	13.71	91.73	13.31	3.40	2.61	36.69	7.89
Sex											
Males											
Pre	41	96.60	13.49	94.02	13.15	91.90	11.07	4.46	2.57	<i>a</i>	<i>a</i>
Post	31	98.37	14.53	94.84	15.57	92.42	12.21	4.03	2.95	39.29	8.29
Females											
Pre	37	89.92	12.13	93.30	12.09	89.24	10.63	2.59	2.30	<i>a</i>	<i>a</i>
Post	32	92.50	11.70	93.88	11.86	91.06	14.46	2.81	2.14	34.95	7.30

Group	<i>n</i>	Reading		WRAT3 Spelling		Arithmetic		GALT		Watson-Glaser	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Grade											
9											
Pre	28	92.32	13.89	93.61	13.93	92.18	11.44	3.54	2.90	<i>a</i>	<i>a</i>
Post	25	93.88	15.19	92.88	15.31	93.08	13.95	3.48	2.43	37.44	10.30
10											
Pre	26	97.79	9.97	96.65	10.92	92.62	9.62	3.64	2.56	<i>a</i>	<i>a</i>
Post	21	99.10	10.93	98.90	11.77	93.71	14.38	4.42	3.02	35.17	6.25
11											
Pre	10	93.10	15.72	95.10	7.64	87.90	11.32	3.40	1.84	<i>a</i>	<i>a</i>
Post	7	96.86	11.25	91.14	8.28	86.71	11.29	2.14	1.57	37.33	4.04
12											
Pre	14	88.43	13.95	87.29	14.19	85.86	10.89	3.54	2.79	<i>a</i>	<i>a</i>
Post	10	89.90	14.07	90.70	15.43	87.70	10.27	2.00	2.00	37.75	2.63

Note. The *a* signifies that no pretest was given for the Watson-Glaser. The total number of students who took the posttest was 35. For type of

instruction the total was as follows: study skills = 11, no study skills = 10, prior chess = 14. For the other two comparisons the total number was, males = 14, females = 21 and for grade, 9th = 16, 10th = 12, 11th = 3, 12th = 4.

Table 2

Intercorrelations Between All Measures

Measure(n)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Grade(78)	-	-.22	.83**	.01	-.07	-.06	-.17	-.22	-.01	.09	-.01	-.29	.19	.11	.10	-.12
2. Sex(78)	-	-	-.24*	.03	-.22	-.03	-.05	-.24	-.27	.14	-.56**	.56**	.12	.11	.05	.22
3. Age(78)	-	-	-	-.13	-.19	-.16	-.24	-.27*	-.16	.08	-.01	-.25	.07	.08	.03	-.15
4. Instruction(78)	-	-	-	-	.09	.02	.15	.13	.05	.00	<i>a</i>	<i>a</i>	.33**	.04	.18	-.10
5. Post Reading(63)	-	-	-	-	-	.83**	.60**	.51**	.31	.33**	.41*	-.01	.15	-.04	.30*	-.05
6. Post Spelling(63)	-	-	-	-	-	-	.53**	.40**	.22	.37**	.28	.07	.01	.35**	.26*	.04
7. Post Arithmetic(63)	-	-	-	-	-	-	-	.59**	.30	.41**	.55**	.00	.12	.10	.50**	.09
8. Post Galt(63)	-	-	-	-	-	-	-	-	.51**	.20	.71**	-.14	-.10	.02	.27*	.38**
9. Post W-G(35)	-	-	-	-	-	-	-	-	-	-.07	.48	.10	.15	-.11	.29	-.07
10. Final Grade(63)	-	-	-	-	-	-	-	-	-	-	.43*	-.34	-.07	.23	.32*	.04
11. Chess Test(23)	-	-	-	-	-	-	-	-	-	-	-	.62**	-.21	-.06	-.01	-.01
12. Chess Rank(23)	-	-	-	-	-	-	-	-	-	-	-	-	.21	-.13	.10	.35
13. Reading Gain(60)	-	-	-	-	-	-	-	-	-	-	-	-	-	-.04	.08	-.17

Measure(<i>n</i>)	Chess and Study Skills Instruction 20															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
14. Spelling Gain(61)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.13	-.06
15. Arithmetic Gain(61)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02
16. GALT Gain(58)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. The *a* signifies the correlation was not applicable since the chess test and chess rank was only obtained for one level of instruction, the chess and study skills group. Cronbach's Alpha = .868. * $p < .05$. ** $p < .01$

Table 3

Rao's F-Statistic with Successive Roots Removed

Roots Removed	Canonical Correlation	Canonical R-Squared	Rao's <i>F</i> -Statistic	<i>df</i>	<i>p</i>	Wilk's Lambda
0	.426	.181	2.23	12 & 193.4	.012	.710
1	.315	.099	1.83	6 & 148	.097	.867
2	.195	.038	1.48	2 & 75	.233	.962

Table 4

Standardized Coefficients for Canonical Variables

Variable	CANO1	CANO2	CANO3
Set 1			
Type of Instruction	.535	.567	.190
Final Class Grade	.638	-.677	.366
Watson Glaser Posttest	.551	.097	-.730
GALT Gain Score	-.071	-.381	-.565
Set 2			
Reading Gain Score	.381	.898	.239
Spelling Gain Score	.136	-.262	.966
Arithmetic Gain Score	.871	-.366	-.364

Table 5

Canonical Variable Loadings, Total Variance, and Redundancy for Both Sets of Variables

Variable	CANO1	CANO2	CANO3
Set 1			
Type of Instruction	.559	.602	.213
Final Class Grade	.614	-.694	.377
Watson Glaser Posttest	.546	.161	-.712
GALT Gain Score	-.120	-.455	-.535
Proportion of total variance extracted	.250	.269	.245
Redundancy of Set 1, given Set 2	.045	.027	.009
Set 2			
Reading Gain Score	.444	.879	.176
Spelling Gain Score	.236	-.342	.909
Arithmetic Gain Score	.918	-.331	-.219
Proportion of total variance extracted	.365	.333	.302

Redundancy of Set 2,

given Set 1 .066 .033 .011