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DEVELOPMENT AND VALIDATION OF THE ACADEMIC COMPETENCE SCALE FOR ELEMENTARY SCHOOL STUDENTS

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Abstract: The present study aims to construct and validate the Academic Competence Questionnaire for elementary school students. Item analysis was done with the help of criteria suggested by Edwards (1969), t-values were calculated for all the statements. The 90 elementary school students from Patiala District, Punjab to check its reliability and validity, filled the Academic Competence Questionnaire. The preliminary draft of questionnaire were included 70 statements though after applying item analysis only 20 statements were selected for final draft. The reliability of final draft was examined with the help of split-half and test-retest reliability. The content and criterion related validity methods were applied to test its validity. Results of the present study found that Academic Competence Questionnaire is highly reliable and valid for elementary school students.

Keywords: Academic Competence, Elementary School Students.

INTRODUCTION

Academic competence occupies a pivotal position in the development of children. Children may be competent but may not be intelligent. Competence is the ability of an individual to do a study and work properly. Competence can enhance children’s academic skills. Academic competence can be associated with the knowledge and application of effective study skills. Competence in pre-academic and academic skills will be key outcomes that will affect many areas of the child’s life. Children who have strong pre-academic skills in early childhood will be more likely to succeed in academic skills once they enter school. School-age children with academic competence will be more likely to complete school successfully, seek higher education, and get and keep a living wage job. Academic competence also has important effects on self –esteem and motivation. Children who complete academic task successfully feel more confident of them and are more motivated to continue trying academic endeavors. In contrast, children who experience repeated academic failure are more likely to give up and stop trying in school, a condition known as learned helplessness. Academic competence can be enhanced with the help of proper support of the teacher by fostering good study habits and inculcating deep approach of studying among the students.

1.1 Academic Competence Questionnaire

The Academic Competence Questionnaire is a self-report instrument designed to assess the academic competence of elementary school students. The academic competence questionnaire was translated into Punjabi language and validated by the investigator herself. The term academic competence is used in different research studies many of the critical skills-reading, writing, calculating, solving problems, attending, questioning, and studying- needed for academic success (DiPerna & Elliot, 1991). “Academic Competence” interchangeably with terms such as “Academic Competence” and “Academic Ability” (Henggeler et al. 1991; Rotheram, 1987). Academic competence will help to enhance students’ achievement and performance in their studies. It helps in developing good study habits and makes them competent in all areas of education. Keeping these facts in view, an academic competence scale was constructed and standardized to measure academic competence of elementary school students.

1.1.1 The Item Pool

The review of academic competence provided a rationale to include 80 items that pertain to (i) perceived competence for learning (ii) critical thinking and motivation (iii) study habits (iv) behavior pattern (v) achievement motivation (vi) personal strain (vii) psychological hardiness. The item pool was given to experienced teacher’s and language experts to judge the content of each item and its relevance. On the basis of expert opinion, it was decided to have 70 items in preliminary draft of scale. The distribution of items, both positive and negative is given in table 1.1.

Table 1.1Item Distribution in Preliminary Draft of Academic Competence Scale

Dimension		Item Number	Total
Perceived competence for learning	Positive	1, 4, 8, 16,	4
Critical thinking and motivation	Positive	2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18	14
Study habits	Positive	19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29	11
Behavior pattern	Positive	30, 31, 32, 33, 34, 35	6



	Negative	61	1
Achievement motivation	Positive	36, 37,38,39,40, 41, 42, 43,44,68, 69, 70	12
	Negative	59, 58, 62, 63, 64, 66, 67	6
Personal strain	Positive	45, 46, 52,53	4
	Negative	47,48, 49, 50, 51, 54	6
Psychological hardiness	Positive	57	1
	Negative	55, 56, 60, 65, 67	5
	Total		70

1.1.2 Sample for Try-Out

The psychological principles governing test construction require rigorous statistical treatment. For this purpose, a sample of 90 school students of 8th class studying in different elementary schools was drawn from Patiala district. The school wise list of sampled students, used for administration of preliminary draft of academic competence scale is given in table 1.2.

Table 1.2 Sampling Distribution of Elementary School Students for Item Analysis

S. no.	District	School	No. of Students	Male	Female
1.	Patiala	Government. Girls. Senior. Secondary. School	30	-	30
2.	Patiala	Government. Senior. Secondary. School Bahadurgarh	30	15	15
3.	Patiala	Senior. Secondary. Model School Punjabi University Patiala	30	15	15
		Total	90	30	60

1.1.3 Scoring of Preliminary Draft

Each respondent student was requested to indicate his / her response to each statement on a 5-point continuum ranging from “Always to Never”. The scoring for positive statements was made by giving weights of “5, 4, 3, 2 and 1” for endorsement in terms of being “always, most often, frequently, sometimes, never”. The scoring pattern for negatively worded statements was reversed.

Table 1.3 Scoring Pattern of Academic Competence Scale

Response Pattern	Scoring
Always	5
Most Often	4
Frequently	3
Some Times	2
Never	1

1.1.4 Item Analysis

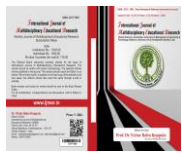
After scoring, the response sheets were arranged in ascending order, based on total scores of students. A scrutiny of response pattern was made and a sample of 90 students was retained to obtain a high scoring (upper 27%) and a low scoring (bottom 27%) with 70 items in each group. Following the criteria suggested by Edwards (1969), t-values for all the 70 statements were calculated. The means and SDs of high scoring and low scoring groups along with t-values testing the significance of mean difference for each of the statements are provided in table 1.4.

Table 1.4 Means and Standard Deviation of Item-wise Scores on Preliminary Draft of Academic Competence Along with t- Value

Item No.	High Scoring Group		Low Scoring Group		Mean Difference	t-value
	M	SD	M	SD		
1	3.80	1.54	2.28	1.48	1.52	2.32*
2	4.32	0.75	4.24	1.23	0.08	0.28
3.	4.52	0.87	3.64	1.35	0.88	2.74**
4	3.5	1.57	2.26	1.59	1.24	2.12*
5.	4.6	0.58	3.56	1.26	1.04	3.75**
6	4.28	0.11	3.48	1.32	0.8	3.02**
7	4.68	0.56	4.56	0.87	0.12	0.58
8	3.39	1.07	2.37	1.19	1.02	2.06*



Item No.	High Scoring Group		Low Scoring Group		Mean Difference	t-value
	M	SD	M	SD		
9	4.28	1.10	3.96	1.05	0.32	1.05
10	4.72	0.68	3.80	1.32	0.92	3.10**
11	3.28	1.60	2.16	1.28	1.12	2.74**
12	4.48	0.92	3.36	1.58	1.12	3.07**
13	4.84	0.37	4.40	1.26	0.44	1.68
14	4.64	0.76	3.68	1.07	0.96	3.66**
15	4.76	0.44	3.48	1.23	1.28	4.91**
16	3.92	1.02	2.46	1.05	1.46	4.38**
17	4.36	1.04	3.12	1.27	1.24	3.79**
18	4.24	1.30	3.20	1.12	1.04	3.03**
19	4.2	1.38	4.64	0.86	-0.44	-1.35
20	3.96	1.27	3.88	1.24	0.08	0.23
21	3.7	1.57	2.25	1.59	1.45	2.13*
22	4.52	0.96	4.28	1.06	0.24	0.84
23	4.84	0.37	4.24	1.13	0.6	2.52*
24	4.4	1.00	3.24	1.54	1.16	3.17**
25	3.86	1.44	2.30	1.31	1.56	4.07**
26	4.2	1.19	3.64	1.50	0.56	1.46
27	3.34	0.95	2.50	0.84	0.84	3.00**
28	3.96	1.21	3.84	1.38	0.12	0.33
29	4.52	0.87	3.12	1.56	1.4	3.91**
30	4.64	0.81	3.80	1.21	0.84	2.88**
31	4.44	1.16	4.40	1.16	0.04	0.12
32	4.64	0.76	3.24	1.36	1.4	4.49**
33	3.88	1.54	2.38	1.48	1.5	2.34*
34	3.60	1.58	2.47	1.60	1.13	2.13*
35	4.60	0.71	3.76	1.39	0.84	2.69**
36	4.48	0.96	4.12	1.20	0.36	1.17
37	4.52	0.77	3.48	1.26	1.04	3.52**
38	3.87	1.54	2.39	1.47	1.48	2.33*
39	4.72	0.74	4.32	1.07	0.4	1.54
40	4.84	0.37	4.32	1.11	0.52	2.22*
41	4.48	0.92	3.76	1.33	0.72	2.23**
42	4.76	0.60	4.40	0.96	0.36	1.60
43	4.64	0.86	4.16	1.18	0.48	1.64
44	4.20	1.12	3.28	1.10	0.92	2.93**
45	4.68	0.69	4.28	1.02	0.4	1.62
46	4.68	0.85	4.0	1.38	0.68	2.09*
47	2.24	1.59	1.40	1.08	0.84	2.19*
48	3.20	1.26	1.76	0.66	1.44	5.06**
49	3.72	1.49	1.75	1.17	1.97	5.19**
50	2.24	1.64	1.24	0.93	1	2.66*
51	3.56	1.07	2.48	1.32	1.08	2.04*
52	4.76	0.83	4.52	1.05	0.24	0.90
53	4.72	0.54	3.2	1.19	1.52	5.81**
54	3.28	1.60	2.16	1.28	1.12	2.74**
55	3.60	1.41	1.52	0.96	2.08	6.08**
56	2.08	1.44	1.52	0.87	0.56	1.66
57	2.88	1.88	1.74	1.05	1.14	2.60*
58	2.76	1.78	1.64	1.19	1.12	2.62*



Item No.	High Scoring Group		Low Scoring Group		Mean Difference	t-value
	M	SD	M	SD		
59	1.80	1.50	1.32	1.15	0.48	1.27
60	3.56	1.09	2.27	1.17	1.29	2.78**
61	3.20	1.83	1.96	1.46	1.24	2.65*
62	3.36	1.75	1.60	0.87	1.76	4.50**
63	1.96	1.62	1.64	1.22	0.32	0.79
64	4.76	0.72	3.64	1.38	1.12	3.59**
65	3.09	1.06	2.36	1.18	0.73	2.03*
66	2.40	1.78	1.48	1.16	0.92	2.17*
67	3.88	1.45	2.26	1.31	1.62	4.09**
68	4.48	0.96	3.2	1.76	1.28	3.19**
69	4.20	1.32	3.64	1.38	0.56	1.46
70	4.20	1.12	3.6	1.04	0.6	1.96

Min=1.80; Max= 4.84 Min=1.24; Max=4.56

*Significant at 0.05 level

** Significant at 0.01 level

Note: The bold items from the first draft are selected for final draft.

The table 1.4 shows that t-values, testing the significance of mean difference between high and low scoring groups in case of items at S.No. 2, 7, 9, 13, 19, 20, 22, 26, 28, 31, 36, 39, 42, 43, 45, 52, 56, 63, 69, and 70 did not turn out to be significant (being less than 2.01), hence they were not considered for final draft. From the remaining 49 items, 20 items selected based on following criteria:

- i) Mean score of high scoring group being quite high and of low scoring group being quite low.
- ii) Mean values of high scoring group is 3.5 or above and for low scoring group is 2.5 or less.
- iii) t-value being appreciably high.

Based on item analysis in preliminary draft, items were selected for final draft. The means and SDs of high and low scoring groups along with t-value testing the significance mean difference for final selected items are provided in table 1.5.

Table 1.5 Means and SDs of Items Selected in Final Draft of Academic Competence Scale

S. No. Preliminary draft	in Item No.	High Scoring Group		Low Scoring Group		Mean Difference	t-value
		M	SD	M	SD		
1.	1	3.80	1.54	2.28	1.48	1.52	2.32*
4.	2	3.50	1.57	2.26	1.59	1.24	2.12*
8.	3	3.39	1.07	2.37	1.19	1.02	2.06*
11.	4	3.28	1.60	2.16	1.28	1.12	2.74**
16.	5	3.92	1.02	2.46	1.05	1.46	4.38**
21	6	3.70	1.57	2.25	1.59	1.45	2.13*
25.	7	3.86	1.44	2.30	1.31	1.56	4.07**
27.	8	3.34	0.95	2.50	0.84	0.84	3.00**
33.	9	3.88	1.54	2.38	1.48	1.5	2.34*
34.	10	3.60	1.58	2.47	1.60	1.13	2.13*
38.	11	3.87	1.54	2.39	1.47	1.48	2.33*
48.	12	3.20	1.26	1.76	0.66	1.44	5.06**
49.	13	3.72	1.49	1.75	1.17	1.97	5.19**
51.	14	3.56	1.07	2.48	1.32	1.08	2.04*
54.	15	3.28	1.60	2.16	1.28	1.12	2.74**
57	16	2.88	1.88	1.74	1.05	1.14	2.60*
60.	17	3.56	1.09	2.27	1.17	1.29	2.78**
62.	18	3.36	1.75	1.60	0.87	1.76	4.50**
65.	19	3.09	1.06	2.36	1.18	0.73	2.03*
67.	20	3.88	1.45	2.26	1.31	1.62	4.09**

Min= 2.88; Max = 3.92

Min= 1.60; Max= 2.50

* Significant at 0.05 level

** Significant at 0.01 level



The 20 items selected for final draft who’s minimum and maximum mean scores for high and low scoring groups is this 2.88, 3.92, 1.60 and 2.50 respectively. Mean difference of minimum and maximum mean scores for high and low scoring groups is 1.28 for minimum mean scores and 1.42 for maximum mean scores. The items selected based on high mean difference and variation between high and low scoring groups. Out of which items no. 1, 2, 3, 6, 9, 10, 11, 14, 16, and 19 were significant at 0.05 level of significance and items no. 4, 5, 7, 8, 12, 13, 15, 17, 18 and 20 were significant at 0.01 level of significance.

The dimension wise distribution of items in the final draft of academic competence scale is presented in table 1.6

Table 1.6 Distribution of Items (As per Number in Preliminary Draft) Selected for Final Draft of Academic Competence Scale

Dimension		S. no. of Items in Preliminary Draft	Total
Perceived competence for learning	Positive	1, 4, 8, 16	4
Critical thinking and motivation	Positive	11	1
Study habits	Positive	25, 21, 27	3
Behavior pattern	Positive	33, 34	2
Achievement motivation	Positive	38	1
	Negative	62	1
Personal strain	Negative	48, 54, 49, 51	4
Psychological hardiness	Positive	57,	1
	Negative	60, 65, 67	3
		Total	20

1.1.5 Reliability of Academic Competence Scale

Reliability is a measure of consistency over time and over similar samples. Anastasi and Urbina (1997) reliability refer to “the consistency of scores obtained by the same individuals when re-examined with test on different occasions or with different sets of equivalent items, or under other variable examining conditions.”

Split-Half Reliability

The split-half reliability coefficient for the draft final draft of the academic competence scale presented in table 1.7

Table 1.7 Split-Half Reliability of Final Draft of Academic Competence Scale

Item Pool	r _{hh}	r _{tt}
Odd (10)	0.74	0.85**
Even (10)		

** Significant at .01 level.

The table 1.7 shows that the relationship between two halves of the scale (r_{hh}) came out to be 0.74. When corrected by applying Spearman-Brown prophecy formula, the correlation turned to be 0.85, highly significant at .01 level. This indicates that the academic competence scale is internally consistent.

Test-Retest Reliability

There was a gap of 2 weeks between the 1st and 2nd administration of academic competence scale on 8th class students. The test-retest reliability coefficient of the final draft presented in table 1.8.

Table 1.8 Test-Retest Reliability of Academic Competence Scale

Administration	R
1 st	0.87**
2 nd	

** Significant at .01 level

The table 1.8 shows that the coefficient of correlation between two sets of academic competence scores came out to be 0.87, which is highly significant.

1.1.6 Validity of Academic Competence Scale

The validity of a test concerns what the test measures and how well does it so. In the present case, content validity and



criterion related validity were established as explained here under.

Content Validity

The content validity involves the systematic examination of test content to determine whether it covers a representative sample of the behavior domain to be measured. In the present study, content validation was done while preparing the preliminary draft of academic competence scale and with the help of expert opinion of teacher educators and language specialist with regard to the relevance of each item in the scale.

Criterion Related Validity

Criterion related validity indicates the effectiveness of a test in predicting an individual’s behavior in specialized situations. For this purpose, performance on the test is checked against a criterion i.e., a direct and independent measure of that which the test is designed to measure. In the present study, the academic competence scores obtained on the scale were compared with those obtained on perceived competence for learning, by computing relationship between two measures.

Table 1.9 Relationship of Academic Competence Scores of Present Scale with Perceived Competence for Learning

	R
Present Academic Competence scale	0.68**
Perceived Competence for Learning	

** Significant at .01 level

The table 1.9 indicates that the coefficient of correlation between two sets, being 0.68 (p<.01).

CONCLUSION

The results of split-half reliability showed that the Academic Competence scale is internally consistent. Test-retest reliability indicates a strong relationship between two measurements over period. the academic competence scores obtained on the scale were compared with those obtained on perceived competence for learning to calculate criterion related validity which indicates high correlation between two sets. The academic competence scale was highly reliable and valid for the elementary school students.

EDUCATIONAL IMPLICATIONS

- Academic competence should be enhanced with the help of proper support of the teacher by fostering good study habits and inculcating deep approach of studying among the students.
- Academic competence among the students can be accelerated by making students adopt the art of self -learning and use different study skills during study.
- Parents should provide proper guidance, care and attention to their children to improve their academic competence.
- Teachers should provide equal opportunities to all students for participating in classroom activities and use various methods, teaching strategies to enhance their academic competence.

REFERENCES

- ❖ Diperna, J. C., & Elliott, S. N. (1991). The development and validation of the academic competence evaluation scale. *Journal of Psycho Educational Assessment*. 17, 207-225.
- ❖ Henggeler, S. W., Cohen. R., Edwards, J. J., Summerville, M. B., & Ray, G. E. (1991). Family stress as a link in the association between television viewing and achievement. *Child Study Journal*. 21, 1-10.
- ❖ Rotheram, M. J. (1987). Children’s social and academic competence. *Journal of Educational Research*. 80, 206-211.
- ❖ Anastasi, A., & Urbina, S. (1997). *Psychological testing*. Singapore: Pearson Education.