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ABSTRACT

The impact of open education on today's curriculum has been extensive. Of the many requests for research in this area, none is more important than instrument validation. This study examines the internal structure of Barth's Assumptions about Learning and Knowledge scale and explores its relationship to established "progressivism" and "traditionalism" scales and demographic variables. Barth's scale and Education Scale VII were administered to 149 subjects. Item and factor analysis yielded support for Barth's scale. As hypothesized, the scale correlated significantly with Education Scale VII. No relationships were found with the demographic variables considered. (Author)

The Open Curriculum and Selection of Qualified Staff: Instrument Validation

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The impact of open education on today's curriculum in both Europe and the United States has been most extensive. However, current projects and corresponding publications in the field of open education have noted a death of research within this rapidly growing educational movement. Of the many requests for research (Barth, 1971; Bussis and Chittenden, 1970; Evans, 1971; Plowden et. al., 1967; Walberg and Thomas, 1972), none is more important at this time than the validation of instruments designed to measure the attributes of open education. Certainly the success of open education is limited to ability of the teachers and administrators to function within an open learning environment. The decision to introduce and implement an open curriculum should be based on the capabilities, philosophical referents, and assumptions about learning and knowledge of the existing staff. In an effort to minimize the risk, Barth (1970) developed a promising instrument: Assumptions about Learning and Knowledge. Evidences of the empirical validity of this instrument, however, have been limited.

The purpose of this study, therefore, was to examine the internal structure of the Assumptions about Learning and Knowledge scale and to explore its relationship to established "progressivism" and "traditionalism" scales and various demographic variables.

METHOD

Subjects

Each of the 149 subjects of this study was an elementary teacher in the

Northeastern United States. Eighty-nine percent were females. Approximately 50 percent were currently enrolled in graduate education courses. The teachers constituting the sample were employed in varied types of educational settings, including those identified as "Montessori," "open," "individualized," and "traditional."

Instruments

The instruments employed in this study included the Assumptions about Learning and Knowledge scale, Education Scale VII (Kerlinger, 1968a) and one personal data sheet. The Assumptions about Learning and Knowledge scale contains 29 Likert-type items. A five-point graphic scale is used to record the subject's response. The scale contains two parts as implied in the title of the instrument. The first part, Assumptions about Children's learning, contains five sub-areas (motivation, conditions for learning, social learning, intellectual development and evaluation). The assumptions about knowledge area is not partitioned.

Education Scale VII is a seven point Likert-type interval scale which measures two broad dimensions of attitudes toward education: progressivism and traditionalism. This instrument contains 30 items and has been found to be factorially valid and reliable (Kerlinger, 1968b).

The personal data sheet was designed to determine such demographic characteristics of the subjects as age, sex, years of teaching experience, and grade level taught.

Procedures

The instruments were administered in both group and individual settings. Area and sub-area designations were not included for the Assumptions about Learning and Knowledge scale. Approximately 30 minutes were required to complete the entire set of instruments.

Statistical Analysis

The internal structure of the Assumptions about Learning and Knowledge scale was examined by item analysis and factor analysis. The factor analysis consisted of a principle component solution to determine the independent dimensions of the scale. An orthogonal varimax rotation was then applied to achieve simple structure. Additionally, an odd-even split-half reliability was calculated to determine the homogeneity of the content sampling. Point-biserial and product- moment correlation coefficients were generated where appropriate to explore the relationship between this scale and "progressivism" and "traditionalism" as measured by Education Scale VII as well as the demographic variables. All implied null hypotheses were tested at the .01 level of significance

RESULTS

Each of the 29 items of the Assumptions about Learning and Knowledge scale correlated positively and significantly ($p < .01$) with total score. The correlations ranged from .31 to .61. Two items (4 and 5) were found to have inadequate response option distributions. In general, responses were restricted to the high or "agreement" end of the scale. The overall mean item rating was found to be 4.1 on the 5 point scale; the standard deviation was.39.

Seven independent factors were identified and accounted for 58 percent of the total variance. Relatively simple structure was achieved by rotating the factor matrix. The rotated factor matrix, including eigenvalues and communalities, is presented in Table I.

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insert Table I here

As may be seen by viewing this table, the item communalities were bounded by .41 and .71 with 23 of 29 exceeding .52. Decreases in communalities after rotation were limited to $3X10^{-5}$.

Although some overlap was noted, the extracted factors were in moderate agreement with the sub-areas of the instrument. Factors II, III and IV represent the motivation, conditions for learning and social learning components of the instrument respectively. Factors V and VI are collectively composed of items with high loadings in the intellectual development and evaluation sections. The apparent mixed relationship between these factors/sections is further compounded by two other conditions. Item 14 loaded exclusively on factor VII and three evaluation items appeared with Factor I (knowledge). Item content partially accounts for the factor interactions with regard to the designated dimensions of the instrument.

The odd-even split-half reliability was found to be .82. A corrected value of .90 was determined by applying the Spearman-Brown formula. The content sampling was deemed to be highly consistent.

Correlations significant beyond the .01 level in the expected direction were found between the total score of the Assumptions about Learning and Knowledge scale and the progressivism (r=.57) and traditionalism (r=.36) scores of Education Scale VII. The correlations with age, years of teaching experience, and grade level taught were .15, .03 and -.07 respectively. The point-biserial correlation with sex (1-male, 2-female) was -.02. Thus, the scale appeared to be independent of the demographic variables considered.

CONCLUSIONS/RECOMMENDATIONS

Several evidences have been presented in this study supporting the use of the Assumptions about Learning and Knowledge scale as an empirically valid instrument. Excepting the restricted response option distribution, the instrument is judged to be valid for use within the populations represented by the samples of this study.

Because the validity of any instrument is never a closed issue, the recommendations for improvement emanating from this research should be seriously considered. An effort should be expended to spread-out the generally high and restricted response option choices. Two specific suggestions for accomplishing this are:

a. revise existing statements or add new statements in an effort to provide items which represent more radical or extreme "open education" conditions.

b. introduce negative statements so as to minimize response set.

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Table I
Rotated Factor Matrix for the Assumptions about Learning and Knowledge Scale

N = 149

Factor:		I	II	III	IV	V	VI	VII	Communality
Eigenvalue:		7.28	2.51	1.93	1.72	1.26	1.13	1.06	
Part/area/item									
I. Learning									
motivation	1.	05*	78	20	05	07	-05	-02	67
	2.	08	76	-02	28	05	07	00	66
conditions for learning	3.	11	66	24	20	10	06	21	60
	4.	05	07	12	54	04	27	-14	41
	5.	00	04	73	06	15	04	12	57
	6.	20	-13	48	18	39	21	-02	49
	7.	08	22	76	04	09	13	00	66
	8.	12	36	50	50	-04	19	-11	69
	9.	20	29	52	04	00	14	18	45
	10.	19	24	22	58	11	02	01	49
social learning	11.	20	12	02	68	14	05	11	54
	12.	00	32	-03	66	10	-11	14	58
intellectual development	13.	22	-32	-12	46	13	16	22	47
	14.	03	10	31	18	18	04	70	66
	15.	-08	06	10	20	75	21	06	66
	16.	-07	12	05	17	52	62	09	71
	17.	01	-09	23	47	-04	59	16	66
evaluation	18.	21	05	29	-05	19	53	27	53
	19.	27	18	10	-05	65	02	15	57
	20.	53	-06	23	08	52	02	07	62
	21.	52	-01	21	27	49	00	-17	66
	22.	52	06	12	18	39	26	-28	62
	23.	46	-11	-01	-21	13	50	08	55
	24.	19	08	15	14	07	56	-26	46
II. Knowledge									
	25.	67	00	-05	29	06	29	-04	62
	26.	73	02	06	36	04	07	12	71
	27.	55	25	-06	07	-01	17	38	55
	28.	55	08	22	34	00	-13	-04	49
	29.	67	15	13	-15	08	06	01	52

*All loadings and communalities multiplied by 100