

# Assessment of Master's Degree Programs in Housing, Furnishings, and Equipment

Evelyn J. Sencal

## Introduction

Increased emphasis on program evaluation and quality of professional preparation is essential to meet greater demands placed on higher education. Educational literature is replete with suggestions for improving assessment of university administration, curricula, facilities, faculty, and students. However, the criteria employed in assessing educational programs by either prospective students, accrediting agencies, or the institutions themselves have been built substantially on tradition and have not been validated empirically.

Assessment of graduate programs is limited and does not proceed generally beyond ranking full academic units or institutions as a whole (Cartter, 1966; Dressel, 1976; Roose and Anderson, 1970). Only a few attempts have been made to correlate the quality of educational programs with specific variables, such as the percentage of faculty holding Ph.D. degrees (Huyck, 1966), number of doctorates conferred (Siebring, 1960; Clark, 1957), and an index of faculty publications (Cartter, 1966).

The American Home Economics Association (AHEA) adopted a proposal for accreditation in 1967. The Agency Membership Unit structure provides for a Commission on Graduate Programs whose function is to establish criteria and standards that may be used in future accreditation

*Evelyn J. Sencal is a lecturer in the Department of Clothing, Textiles, and Interior Design, Kansas State University, Manhattan, Kansas*

of graduate programs. In preparation for such action the Commission must secure pertinent data on assessment. Because no empirical investigation has identified and measured a set of qualitative variables of professional programs, determination of a battery of efficient, meaningful criteria is imperative.

## Research Questions

This research was undertaken to determine evaluative criteria useful in assessment of master's degree programs in housing, furnishings and equipment, establish empirically a limited set of dimensions related to quality, explore predictiveness of strong correlates, and investigate the power of discrimination between adequate and inadequate graduate programs.

Specifically, this study addressed the following questions: 1. What characteristics of programs are related to the quality of master's degree programs in housing, furnishings, and equipment? The relationship between the quality of master's degree programs and selected characteristics of these programs were determined. Criteria judged by experts were identified and verification of their importance can be manifested by high correlations between those criteria and the rated quality of programs. In an effort to identify quality master's degree programs across the nation and reveal characteristic norms, this investigation may serve as a catalyst for self-evaluation by units and may provide a foundation for further investigation of the quality of graduate education.

2. Can program characteristics be grouped into various dimensions? If so, will the dimensions correspond to those employed by accrediting agencies? Most national professional accrediting agencies have grouped criteria logically into major areas. Question 2 inquires as to the construct validity of these areas.

3. Can the quality of graduate programs be predicted by using a limited set of variables which are representative of a dimensional structure and which are economical in time and effort expended for measurement? If factors could be derived empirically, it would be practical to consider the more powerful variables from each dimension in estimating quality.

4. Do high correlates of quality discriminate between the inadequate and the adequate master's degree programs? In the administration of accreditation, agencies are faced ultimately with making a decision or recommendation concerned with the basic adequacy level of programs. Of practical import are discriminating variables which reveal differences between the inadequate (non-accredited) programs and the adequate (accredited group).

#### **The Study**

Twelve master's degree programs in housing, furnishings, and equipment were included in the study. Programs were identified and verified as existent, active programs by correspondence from program chairpersons. Each program was administered by a home economics unit in higher education and identified from AHEA's "Titles of Theses," *Home Economics Research Abstracts*, "Graduate Opportunities for Home Economists — 1966-67, 1968-69", *Housing and Equipment Programs in Colleges and Universities*, 1965, and Harper's *Selected Home Economics Degrees and Enrollment Data from Member Institutions of the Association of Administrators of Home Economics*, 1968-1974.

#### **The Independent Variables, Program Characteristics**

Measurable variables or characteristics of graduate programs suggested by 19 accrediting

agencies and 18 educational investigators were reviewed, and 66 variables were selected for investigation. Data for these independent variables were collected from institutional catalogues, professional journals, reference sources, and a questionnaire sent to each program chairperson.

#### **The Dependent Criterion, Rated Quality of Programs**

The dependent criterion, rated quality of master's degree programs, was determined by ranking the mean ratings of other programs by program chairpersons. The validity of ratings of programs by chairpersons is substantiated by studies in other disciplines (Cartter, 1966; Somit and Tanenhaus, 1964).

A scale was utilized to measure the dependent criterion. Ratings of programs taken from a questionnaire were given the following values: Excellent, 5; Good, 4; Adequate, 3; Marginal, 2; Inadequate, 1; and Not Able to Rate, 0. Ratings by chairpersons were based on current impressions and knowledge of programs. Responses in the "Not Able to Rate" column and the chairpersons' ratings of their own programs were not included in the mean ratings calculated for each program.

#### **Techniques of Analysis**

Because the study was designed to investigate the total population, descriptive statistics were appropriate for analyzing the data.

Question 1 pertains to the relationships between program quality and selected program characteristics. The relationships between these measures were determined by a correlation analysis. Pearson product moment correlation coefficients were calculated between each of the 66 independent variables and the mean program quality ratings in order to identify high correlates.

A factor analysis was employed to identify broad dimensions of quality in Question 2. The 66 x 66 matrix was reduced after inspection of variables with zero standard deviation and variables based on low number of programs which would have contributed to an inconsistent matrix. The

principal components method was used as the initial factoring procedure, followed by rotation to a simple structure by the orthogonal, varimax procedure (Kaiser, 1958) using factors with eigenvalues greater than unity. Selection of factors for investigation was based on relative interpretation and degree to which factors accounted for the total variance.

Variables representing the major factors were then employed as the independent variables in multiple regression analyses to establish their predictability of the quality criterion. These variables were selected on the basis of representativeness of the factors, size of factor loadings, ease of measurement, and the pre-determined correlations with the quality criterion.

Finally, a scale was devised to measure the quality rating of each program by graduate program chairpersons. Mean quality ratings were obtained for each institution's program, and each program was categorized into one of three pro-

gram quality groups: Inadequate programs; Adequate programs; and Strong programs. Each of the 66 program characteristics was quantified for each program and mean scores were derived from all programs categorized into the Strong, Adequate, and Inadequate quality groups. Differences in mean scores were inspected for discriminating tendencies in measurement between the groups.

#### Findings

*What characteristics of programs are related to the quality of master's degree programs in housing, furnishings, and equipment?* The correlates are identified in ranked order in Table 1. Seven correlates ( $|r| \geq .49$ ) are identified as strong: doctoral program offered, lecture method of instruction predominates, student mix of international students, rate of graduate faculty turnover, graduate faculty holding an advanced degree in a root discipline only, graduates continuing in Ph.D. work, and faculty engaged in research.

TABLE 1. Rank-Ordered Correlates of Program Quality

#### Rank — (r) a — Description of Independent Variables

1	.57	Existence of <i>doctoral program</i> in subject-matter area
2	.55	Number of <i>credits offered through lecture method</i>
3	.53	Percentage of <i>international students</i>
4	.52	Percentage of <i>graduate faculty holding advanced degree in root discipline</i>
4	-.52	Annual rate of <i>graduate faculty turnover</i>
6	.50	Annual percentage of <i>graduates continuing in doctoral program</i>
7	.49	Percentage of <i>graduate faculty engaged in research</i> , excluding research with advisees
8	.46	Number of <i>curricular tracts</i> in program
8	-.46	<i>Increase in degrees conferred over a decade</i>
10	.44	Number of <i>degrees conferred annually</i>
10	.44	Percentage of <i>out-bred students</i>
12	.42	Annual average number of <i>visiting associate and full professors</i>
12	.42	Percentage of <i>graduate faculty holding an advanced degree in Housing, Furnishings or Equipment</i>
14	-.40	Ratio of <i>enrolled students per faculty member</i>
15	.39	Percentage of <i>faculty engaged in research participating in interdisciplinary research</i>
15	.39	Article Equivalent Index of <i>quality of publications</i> by graduate faculty b
15	.39	Amount of <i>change in expectations for the program administration</i> from outside the unit over a decade
18	.38	Percentage of <i>associate and full professors among graduate faculty</i>
19	.35	Existence of formal <i>evaluation of graduate instruction</i>
20	.34	Probability of <i>year-around operation</i> of program
21	.33	Number of <i>graduate students receiving national professional scholarships or awards or having published from master's theses</i> in major professional journals over a 5-yr. period
22	.32	Number of <i>grants awarded annually</i>
23	.31	Median number of <i>student/advisor meetings</i> per semester
23	-.31	Percentage of <i>fully out-bred graduate faculty</i>
25	.30	Number of <i>interinstitutional and community services, facilities and resources</i> employed
25	.30	<i>Size of graduate student body</i>

27	-.29	Percentage of credits in <i>specialization required</i> in students' programs
28	.27	Number of credits in <i>research techniques required</i> in students' programs
29	.25	Median <i>salary of full-time graduate faculty</i> for academic year
29	.25	Median number of <i>years of faculty in graduate education</i>
29	.25	Degree of <i>cooperation with and efficiency of library</i>
32	.24	Percentage of <i>credits outside of specialization required</i> in students' programs
33	.23	Maximum number of semester <i>credits offered in curricula</i>
34	.21	<i>Program with thesis</i> employed by majority of graduates
35	.20	<i>Age of program</i> in years
36	.18	Requirement of both <i>oral and written examinations</i>
36	.18	Number of <i>library volumes per student</i>
38	-.17	Minimum <i>g.p.a. required for admission</i> to program
39	.15	Percentage of graduate <i>faculty with at least two years practical work experience</i> , excluding teaching
39	.15	Percentage of <i>graduates with interdisciplinary committees</i>
39	.15	Percentage of <i>all graduate students holding scholarships or assistantships</i>
39	-.15	Percentage of graduate <i>faculty with formal college teaching training</i>
43	.14	Honors Index of <i>professional leadership of graduate faculty c</i>
44	-.13	Median <i>credit load of full-time graduate faculty per semester</i> , excluding theses or independent study
45	-.12	Judgment of program <i>chairperson of permissiveness of graduate faculty</i>
46	.11	Number of <i>graduate faculty</i>
46	.11	Membership of program <i>chairperson in major scholarship societies</i>
48	.10	Highest academic <i>degree held by program chairperson</i>
48	-.10	Number of <i>credits offered through pragmatic, applicative methods</i>
50	.09	Percentage of credits as <i>electives required</i> in students' programs
51	.08	Median number of <i>student/faculty social contacts</i> per academic year
52	.06	Percentage of <i>full-time students holding scholarships or assistantships</i>
52	.06	Existence of <i>released time for faculty research</i>
52	-.06	Number of <i>other graduate departments served</i>
55	.05	Percentage of <i>graduate faculty holding doctoral degrees</i>
56	.03	Degree of <i>institutional support</i> for program
56	.03	Judgment of program <i>chairperson of adequacy of library holdings quality</i>
56	-.03	<i>Maximum class size</i> permitted
59	.02	Number of <i>credits offered through group interaction method</i>
60	.01	Number of <i>credits in research</i> offered in program
60	-.01	Average <i>size of research grants</i> by dollar amount
62	.00	Existence of <i>research laboratories</i>
62	.00	Quantification of <i>administrative shortcomings</i> in the unit
62	.00	Existence of <i>graduate student organization</i>
62	.00	Existence of <i>defined program objectives</i>
62	.00	Winsor Index of <i>quality of publications</i> by graduate faculty <sup>d</sup>

a For comparative reference, the absolute value of  $r_{.95}$  from a table of "Percentile Values of  $r$  for  $n$  Degrees of Freedom when  $P=0$ " (Walker and Lev, 1953) is .49.

b Cartter, 1966.

c Lazarsfeld and Thielens, 1958.

d Mood and Benson, 1966.

*Can program characteristics be grouped into various dimensions? If so, will the dimensions correspond to those employed by accrediting agencies?* Variables with absolute factor loading values equal to or greater than .30 were selected for review in the factor structures and are presented in Table 2. Resultant factors represent dimensions of faculty, students, curricula, and administration/facilities. Six factors were ex-

tracted: training and performance of faculty; size of student body; sensitivity to student needs; size of curricular program; research emphasis in the program; and external facilities, resources, cooperation, and support. These data establish construct validity for the conceptual dimensions of faculty, students, curricula, and administration/facilities employed by accrediting agencies.

TABLE 2. Absolute Factor Loading Values  $\geq .30$  for Variables Correlated to Quality

Independent Variable	Factor Loading Value
Training and Performance of Faculty	
Associate and full professors among graduate faculty	.77
Faculty with practical work experience	.46
Faculty holding doctoral degrees	.42
Faculty holding advanced degree in root discipline	.35
Faculty engaged in research	.35
Size of Body of Students	
Degrees conferred	.98
Size of graduate student body	.94
Increase in degrees	.88
Student/faculty ratio	.88
Doctoral program	.42
Sensitivity to Students Needs	
Student/faculty social contacts	.67
Student/advisor meetings	.56
Cooperation and efficiency of library	.40
All graduates holding scholarships or assistanships	.36
Size of Curricula	
Credits offered through group interaction method	.83
Credits offered in curricula	.77
Credits offered through lecture method	.42
Credits offered through pragmatic, applicative method	.42
Doctoral program	.39
Research Emphasis in Curricular Program	
Grants awarded	.72
Doctoral program	.45
Released time for faculty research	.35
Cooperation and Support of Administration	
Interinstitutional and community services, facilities and resources	.99
Visiting associate and full professors	.58
Cooperation and efficiency of library	.36

Can the quality of graduate programs be predicted by using a limited set of variables? Experimentally, one representative variable was chosen from each of the six factors and employed as independent variables in multiple regression analyses to establish their predictability of the quality criterion. These variables are: proportion of associate and full professors, number of graduate degrees conferred, student/faculty social contacts, size of graduate curriculum, acquisition of research grants, and inter-institutional and community facilities employed. Multiple correlation coefficients were computed using these independent variables as predictors and Table 3 presents the data. The coefficient of multiple correlation between the six predictor

variables and the quality criterion is .79. The F-test employed at the .05 level of k, n-k-1 degrees of freedom revealed the six predictors combined is significant, but not for any of the individual variables treated alone.

Do high correlates of quality discriminate between the inadequate and the adequate programs? Differences in mean scores can be inspected for discriminating tendencies in measurement between the competent and incompetent groups of programs. The top 26 correlates ( $|r| \geq .30$ ) differ in measurement between the Adequate and the Inadequate program groups; all differences are directionally satisfying and are consistent from Strong to Adequate and from Adequate to In-

TABLE 3. Multiple Regression Analysis with Six Predictor Variables

Independent Variable	Multiple Correlation Coefficient	Beta Coefficient	F-Value	(df=k, n-k-1)
Associate and full professors among graduate faculty		.40	1.33	(1,5)
Degrees conferred		-.23	.39	(1,5)
Student/faculty social contacts		-.42	1.39	(1,5)
Credits offered in curricula		.13	.16	(1,5)
Grants awarded		.24	.69	(1,5)
Interinstitutional and community services, facilities and resources		.62	3.38	(1,5)
Six variables combined	.79		5.40 <sup>a</sup>	(6,5)

<sup>a</sup> Significant at .05 level

adequate groups. Table 4 presents the measures for this group of correlates.

### Conclusions

Data support the following conclusions:

1. Characteristics of graduate programs lend themselves to empirical analyses, thereby sanctioning further exploratory research.

2. Housing, furnishings, and equipment master's degree programs may be assessed by the same criteria, and a selective group of program characteristics are high correlates of quality. Economy of time and expenses could be realized by the employment of a limited set of variables.

3. Correlates of quality can be grouped into dimensions identified as students, faculty, curricula, and administration/facilities. Verification of the conceptual dimensions of criteria employed by professional accrediting agencies contribute to the concept of construct validity.

4. A limited set of criteria may be employed in the assessment of master's degree programs. Analysis of data revealed that six independent variables selected for this study could be employed to predict quality programs in housing, furnishings, and equipment. Condensation of criteria is justified in assessment by prospective students in particular. Although accrediting teams might find it limiting to use only six correlates of quality, the fact remains that reduction of criteria is possible.

5. High correlates of quality discriminate and change progressively from the inadequate to the adequate and from the adequate to the strong programs. Selection of variables employed as criteria in accreditation, for example, is not based solely on high relationships to or predictability of overall program quality. In considering the validity of selected variables, measures must differentiate at the lower levels of quality because delineation between adequate and inadequate program quality is a primary goal.

Cartter, A.M. *An Assessment of Quality of Quality in Graduate Education*. Washington, D. C. : American Council on Education, 1966.

Clark, Kenneth E. *America's Psychologists: A Survey of a Growing Profession*. Washington, D.C.: American Psychological Association, 1957.

Dressel, P. *Handbook of Academic Evaluation*. San Francisco: Jossey-Bass, 1976.

Huyck, E. "Faculties in Predominantly White and Predominantly Negro Higher Institutions." *Journal of Negro Education*, 1966, 35, 381-92.

Kaiser, H. F. "The Varimax Criterion for Analytic Rotation in Factor Analysis." *Psychometrika*, 1958, 23, 187-200.

Lazarsfeld, Paul F., and Thielens, Wagner, Jr. *The Academic Mind*. Glencoe, Ill.: The Free Press, 1958.

Mood, A.M., and Benson, C. S. "Measurement of Quality in Education." *Science Education*, 1966, 50, 279-85.

Roose, K. D. and Andersen, C. C. J. *A Rating of Graduate Programs*. Washington, D. C.: American Council on Education, 1970.

Siebring, B. "A Comparison of Insitutions in the Graduate Training of Ph.D. Chemists by Oc-

cupationaSpecialization." *Science Education*, 1960, 44, 294-97.

Somit, A., and Tanenhaus, J. *American Political Science: A Profile of a Discipline*. New York: Atherton Press, 1964.

Walker, H., and Lev, J. *Statistical Inference*. New York: Holt, Rinehart and Winston, 1953.

TABLE 4. Rank-Ordered Correlates of Program Quality and Mean Scores in Program Quality Levels

Rank	Independent Variables Description	Mean Scores			Score
		Strong Programs	Adequate Programs	Inadequate Programs	Difference (Adequate-Inadequate)
1	Doctoral program (no=1; yes=2)	1.6	1.2	1.0	.2
2	Credits offered through lecture method	11.5	10.1	8.4	1.7
3	Percentage of international students	11	10	4	6
4	Percentage of faculty holding advanced degree in root discipline	22	17	15	2
4	Percentage of faculty turnover	6	7	8	-1
6	Percentage of graduates continuing in doctoral program	13	9	4	5
7	Percentage of faculty engaged in research	59	56	23	33
8	Curricular tracts	2.1	1.9	1.7	.2
8	Increase in degrees	2.6	2.9	3.2	-.3
10	Degrees conferred	5.3	3.8	3.5	.3
10	Percentage of out-bred students	78	70	65	5
12	Visiting associate and full professors	4.7	4.4	3.8	.6
12	Percentage of faculty holding an advanced degree in Housing, Furnishings or Equipment	65	64	61	3
14	Students per faculty member	22.9	25.8	26.7	-.9
15	Percentage of faculty engaged in research participating in interdisciplinary research	42.2	36.7	35.6	1.1
15	Quantity of publications index	48.1	31.2	8.4	22.8
15	Change in expectations for the program administration (no change=2; greater expectations=3)	2.8	2.7	2.5	.2
18	Percentage of associate and full professors among graduate faculty	67	66	60	6
19	Evaluation of graduate instruction (no=1; yes=2)	1.2	1.2	1.1	.1
20	Year-around operation (seldom=2; usually=3)	2.7	2.7	2.5	.2
21	Students receiving national professional scholarships or awards or having published from master's theses	.96	.26	.04	.22
22	Grants awarded	3.0	1.4	.7	.7
23	Students/advisor meetings	9.4	8.1	8.0	.1
23	Percentage of out-bred graduate faculty	71	77	92	-15
25	Interinstitutional & community services, facilities & resources	.19	.18	.04	.14
25	Size of graduate student body	12.1	11.5	9.0	2.5