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ABSTRACT
            A survey of business and industrial training team
supervisors and members was undertaken in order to identify the most
important entry-level competencies required of instructional
development specialists in a variety of business and industrial
settings. The study sample of 300 was randomly selected from the
approximately 2,850 members of the Senior Trainers interest group of
the American Society for Training and Development (ASTD).
Participants were requested to rank a list of instructional
development competencies. Survey data were analyzed by tabulating the
mean for the overall importance of each competency so as to rank
order the entire list. The results indicated that: (1) certain
competencies were consistently rated as more important than other
competencies; (2) interpersonal skills were the highest-ranked
competencies; (3) instructional team members differed from
instructional team supervisors in their ranking of competencies; (4)
certain competencies were consistently lowest rated; and (5) the type
and size of organization and the function of an organization's
development unit were not important variables in determining desired
competencies. A set of 13 recommendations based on the study are
presented. Two ranked lists of competencies and a list of
participants are provided as well as a 29-item bibliography.
(Author/JL)

ENTRY LEVEL COMPETENCIES FOR INSTRUCTIONAL DEVELOPERS

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President, Dynamic Directions

Association for Educational Communications and Technology
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Tuesday, May 4, 1982

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Demands for accountability and relevance in education and training have led to increased emphasis on the competence of practitioners in a number of professions. Competency-based instruction, with its goal of mastery of the material by all qualified learners, in spite of their differences in entry skills and abilities, has been one result of this emphasis. Another result is the use in many professions of competencies to measure the professional effectiveness of persons within the field, and as such, to judge whether the standards of a profession are being upheld. As in other professions, persons in instructional development have been concerned with identifying the most appropriate competencies for practititoners in that field.

The primary purpose of the study on which this paper is based was to identify the most important entry level instructional development (ID) competencies required in a variety of business and industry settings, as perceived by those responsible for hiring and/or supervising the instructional developers. Recognizing that each organization would have unique characteristics and requirements, it was the objective of this study to identify common entry level competencies that were considered essential for team members as well as for persons in management or supervisory positions in an instructional development, training, or human resource development unit. The significance of this study is that it will assist academic institutions in preparing students who are interested in going into business or industrial settings. The study should also be of value to the businesses and industries as a selection guide, as they will have a better idea of what skills to expect from ID graduates.

Null research hypotheses were formulated to investigate which

competencies (the dependent variables in the study) were seen as the most important for two entry level positions (team member and supervisor/-manager) on development teams, and to investigate whether type of organization, principal function of the development unit, and size of the development unit (the independent variables) were important variables in the competencies desired for either of these two entry level positions.

The four major limitations of the study were: 1) that it was a survey, and as such depended on subjective perceptions of respondents; 2) the sample was drawn from members of only one national organization (ASTD) and therefore looked at a selected group in business and industry; 3) information was requested from those who hire and/or supervise rather than from those who actually perform the work; and 4) the researcher chose not to study the areas of educational, health care, military or governmental agencies, which also employ instructional developers.

The review of recent literature assisted in forming a basis and impetus for the study. The concepts of competence and competency-based education were explored and discussed, as were the movement of instructional developers into business and industry, the emergence of human resource development as an important professional activity, and the importance of understanding basic considerations about the adult as a learner. Proceedings of various meetings and reports of previous studies were examined and utilized in formulating the research questions and hypotheses and to generate the list of competencies used.

A sample size of 300 was randomly chosen from the approximately 2,850 members of the Senior Trainers interest group of the American Society for Training and Development. Each participant was asked demographic data regarding the name of the organization of the respondent, the principal

product/service offered, the type of organization (indicated by a check mark next to one of the choices of: merchandizing, service organization, industrial manufacturing or scientific manufacturing), a rank ordering of three possible principal functions of the instructional development or training development unit (training, education, and development), the number of employees in the unit, the number of developers supervised by the respondent, and the primary responsibility of the respondent in the training development function. They were then asked to rate the importance of the seventy competencies according to a five point Likert type scale (from "essential" to "of no importance"). Through the initial mailing and three follow-ups, 162 or 54 percent of the questionnaires were returned. Of the 162 returns, 127 or 43 percent, were useable for the analysis of data in the study. (See Appendix for those participants willing to be credited for responding. List is arranged alphabetically by organization, and contains the name of the organization and the name of the person who responded.)

As to type of organization, sixteen (or 12.6 percent) of the respondents represented merchandizing, fifty-nine (or 46.5 percent) represented service organizations, twenty-five (19.6 percent) represented industrial manufacturing, and twenty-seven (21.3 percent) represented scientific manufacturing.

In terms of primary function of the development unit, 87 percent of the respondents ranked training as the primary function of their unit. Education was rated as the primary function by 7.5 percent, with 4.7 percent reporting development as their primary function.

The size of the development unit ranged from one to ten thousand employees, with the median being 6.5 employees. The number of developers

supervised by the respondents varied from one to forty, with the average being 5.7 persons; the median was three persons.

The data was analyzed by tabulating the mean for the overall importance of each competency, so as to rank-order the entire list. A difference was found in the rank order of the competencies. Repeated measures analyses of variance revealed statistical significance for the higher ranked competencies (numbers one through three for team members, and one through four for supervisors/managers) as well as for a few (58th for team members; 63rd, 64th and 67th for supervisors/managers) of the competencies toward the bottom of the lists. However, it would appear that for a majority of the competencies below those ranked the highest three or four, there was no significant difference in importance as judged by the respondents.

An intraclass correlation analysis indicated that the raters were able to discriminate well between what they were rating (between the competencies), as well as how well they agreed on any particular item (on an individual competency).

Multivariate analysis of covariance, with size as the covariate and a priori planned comparisons for the main effects of type of organization, primary function of the development unit and size of the development unit, revealed no statistical significance, except in terms of the working with equipment in the scientific manufacturing group.

Conclusions

The following conclusions were drawn from studying the data collected in the study:

Conclusion 1:   Certain competencies were rated as more important than the other competencies.

Although the means computed for the various competencies were all quite close to each other and thus did not differentiate greatly between the competencies, it was important to note that at least the first (top) three competencies for team members, and the top four for supervisors/- managers did show statistical significance. Thus, these three and four. competencies, respectively, were the more important ones as viewed by the respondents. There was then a large "middle" group of competencies, with statistical significance not found again until towards the bottom of the list (fifty-eighth competency for team members; sixty-third for super- visors/managers.) Thus, these latter competencies can be considered as the least important competencies, as viewed by the respondents.

Conclusion 2:   The highest ranked competencies for both groups dealt with interpersonal communication skills.

The highest ranked competencies dealt with interpersonal communica- tion type skills (listening effectively, attitude formation, adapting to differing situations, establishing communication among staff members, and establishing credibility with the group), key skills to possess for almost any occupation. These results were especially similar to those reported by Deden-Parker (1981) in her study, and also somewhat similar to the Pinto/Walker study (1978) results.

Conclusion 3:   There was a difference in the rating of the various competencies for team members as compared to the ratings for supervisors/managers.

Although interpersonal skills rated high on both lists, the other competencies did vary according to whether they were ratings for team

members or for supervisors/managers. The other higher ranked competencies
for team members dealt with applying adult learning concepts, using
equipment effectively, developing objectives, conducting group presenta-
tions, identifying appropriate presentation strategies, using evaluation
data for program revision, identifying audience characteristics, and
describing prerequisite skills; whereas, the other higher ranked competen-
cies for supervisors/managers dealt with an awareness of corporate goals;
communicating with other sections of the organization, preparing long and
short term goals, administering budgets, evaluating the effectiveness of
hired consultants, determining cost benefits, and establishing program
priorities. That developmental skills are emphasized more for team
members and administrative skills more for supervisors/managers also is
supported by the ratings for the competencies at the bottom of the lists
for each group. The less important competencies for team members dealt
with preparing long and short term goals, locating outside consultants,
designing research studies, mediating differences among staff, producing
still photographs and multi-image displays, coordinating activities of the
development unit, acquiring and managing facilities and equipment,
supervising hired outside consultants, producing programs for computers,
administering budgets, and establishing staffing patterns. The less
important competencies for supervisor/managers had to do with preparing
production specifications; preparing specifications for organizing the
physical environment; designing research studies; producing simulations,
role plays, and group activities; possessing subject matter expertise; and
producing pamphlets and brochures, video tapes, slide-tapes, audio tapes,
multi-image displays, photographs, and programs for computers. (It is
interesting to note, however, that designing research studies and

producing still photographs, multi-image displays, and programs for

computers are all low on both lists.)

Conclusion 4: Certain competencies appeared among the lowest ranked
competencies for each group.

Just as there were certain competencies that ranked very highly at

the top of each list, there were certain competencies that fell towards

the bottom of each list. These competencies dealt with designing research

studies and producing still photographs, multi-image displays, and pro-

grams for computers. Evidently these skills were not viewed by the

respondents as being particularly important for either team members or

supervisors/managers.

Conclusion 5: In this study, type of organization, function of the devel-
opment unit, and size of the development unit were not
important variables in determining the desired competen-
cies, except with regard to equipment in scientific
manufacturing organizations.

Statistical analyses supported the suspicions that the competencies

desired for team members and supervisors/managers were not affected by

type of organization, function of the development unit, or size of the

development unit, with the possible exception of scientific manufacturing

industries. Further study could determine whether knowledge of scientific

equipment is important and necessary in those industries; otherwise, the

competencies are not significantly different across the types of organiza-

tions, or affected by function or size of the development unit. Similar

conclusions across occupational lines were drawn by Streit (1979) in his

study.

The congruence of the above findings with those reported by the

various other studies done over several years, suggests that the present

findings have validity and generalizability over different sites.

Recommendations

Keeping in mind the limitations of the study: 1) that it was a survey, and as such depended on subjective perceptions of respondents; 2) the sample was drawn from members of only one national organization (ASTD) and therefore looked at a selected group in business and industry; 3) information was requested from those who hire and/or supervise rather than from those who actually perform the work; and 4) the researcher chose not to study the areas of educational, health care, military or governmental agencies, which also employ instructional developers, the researcher made the following recommendations regarding the implications of the study:

(1) That this list of seventy competencies be used by academic preparation programs in planning curricula and advising and guiding students. This recommendation is based on the following reasons:

(a) This list seems to be fairly comprehensive and close to exhaustive, especially since few respondents added competencies to the list. (And examination of those that were added shows that in several cases the addition was basically a rewording of either a previously stated competency or of a competency that appeared later in the questionnaire. Several others were very situation-specific items that were added.)

(b) The competencies used in this study were carefully selected based on the previous work of others in past studies or committee work. Thus, the competencies should represent the most important ones.

(c) That the competencies are for the most part all consi-
dered to be important ones is evidenced by the high ratings
given to most of the competencies. (Approximately 91% of the
team member competencies had a mean of 2.5 or above, and over
94% of the supervisor/manager competencies had a mean of 2.5
or above.)

(d) The results of the study are consistent with results
reported in previous studies.

(2) That academic preparation programs place a strong emphasis on
the development of interpersonal communication skills, management skills,
and the concepts of adult learning. Since competencies in these areas
ranked so high on the list, not only in this but in previous studies,
emphasis should be placed on these skills as well as technical instruc-
tional development skills.

(3) That academic preparation programs and business and industry
personnel spend some time in determining how the various competencies will
be measured. If these competencies will be used as requirements in an
academic program or as a screening device in hiring by business or
industry, appropriate and consistent ways for measuring such competencies
will have to be established. Consideration should be given to the develop-
ment of instruments that have some validity in measuring these competen-
cies.

(4) That although computer programming skills ranked very low on
both lists of competencies, consideration should be given as to whether
these are important skills for the future. The low ranking given to this
competency (68th out of 70 for team members, and 70th out of 70 for

supervisors/managers) in this study, and the fact that they were also at the bottom of the list in the Deden-Parker and Pinto/Walker studies should be considered from two standpoints: 1) that respondents may have been reflecting the status quo, rather than considering potentially useful or necessary skills in the future, and 2) that the competency statements may not have been clear enough to differentiate between actual programming skills (tending more towards computer science skills) and using knowledge about computers to develop computer-assisted, -aided or -managed training programs. The possibility of acquiring knowledge about computers, in anticipation of future needs, should be investigated by academic preparation programs.

(5) _That it does not appear to be of paramount importance for instructional developers to possess subject matter expertise in the content area to be developed._ Possessing subject matter expertise in the content area to be developed ranked fairly low (39th out of 70 for team members, 63rd out of 70 for supervisors/managers) in this study. Thus, it would appear that graduates from instructional development programs should be able to move into any one of the types of organizations and development units without various specialized background training. The one possible exception might relate to the scientific equipment discussed in Conclusion Five.

(6) _Examine areas of competencies instead of individual ones._ The present study investigated seventy competencies and how they ranked one against another. A future study could take the seven basic _areas_ under which the competencies were grouped and see how they rank in importance (the sets rather than individual competencies.) This would possibly yield results on the _kinds_ of skills that should be learned rather than _specific_

skills. (Domains of skills, with each domain related to another domain.)

(7) <u>Contrast one-person development units with larger units.</u> Since "one-person departments" were eliminated from this study, it would be interesting to contrast them and the skills required to units with more employees. Whether or not the larger departments tend towards specialization of activities could be investigated as well.

(8) <u>Study replies from developers rather than from managers.</u> Information in this study was requested from those who hire and/or supervise rather than from those who actually perform the work. Thus, the competencies listed by supervisors could be those viewed as ideal, or as assumed to be used, while they in fact may not be the ones used by practitioners. A future study could investigate whether responses from practitioners correspond to those given by the supervisors.

(9) <u>Use a different technique for generating the competencies to be studied.</u> In order to further validate the competencies in this and previous studies, it is recommended that a technique such as the critical incident technique be used. This technique, in which respondents describe effective and ineffective behaviors that have been observed as part of actual practice within a specified role, could be used to determine whether the same essential competencies are generated as in a survey where the responses essentially are limited to the answer choices printed on a questionnaire.

(10) <u>Replicate the study with other types of organizations.</u> For someone interested more in educational, health care, military or governmental agencies, this study could be replicated to determine whether these agencies require different competencies, and whether type of organization, function of the development unit, or size of the development unit were

important variables in those organizations.

(11) <u>Study whether competency requirements are different for masters and doctoral level graduates.</u> A possible study that should be of interest to academic preparation programs would be to investigate whether the compe-tencies necessary for masters level graduates vary from those required for doctoral graduates.

(12) <u>Study the amount of formal training needed in instructional development principles and techniques.</u> Another recommendation for further study would be to determine whether formal training in instructional devel-opment principles and techniques really is necessary to work in business and industry in a development unit. Such a study could also study the amount of formal training possessed by persons already working in these positions.

(13) <u>Study specific industries, especially scientific manufacturing.</u> It is suggested that a more in-depth study be made of the manufacturing industries, especially scientific manufacturing, to determine whether they in fact do have unique requirements regarding equipment used.

PARTICIPANTS WILLING TO BE CREDITED FOR RESPONDING

Name of Organization:	Name of Person Responding:
Advanced Systems, Inc.	Odin Westgaard
Advanced Technology Laboratories	Meredith L. Ward
AM Multigraphics	Kayetta Slocum
Amdahl Corporation	Linda L. Thompson
American Express	Dennis J. Stewart
American Manufacturing Company of Texas	James B. Frazier
American Savings Bank	Frederick J. Collett
Arby's, Inc.	Andrew F. Arvay, III
Arthur Andersen and Company	Maurice Coleman
Audio Visual Results	Lee Hancock
Avco Aerostructures	Roxanne P. Willert
Berol Corporation	Dayle E. Rado
Blue Cross/Blue Shield of Mich.	Mary Ann Motyka
Bobby McGee's USA, Inc.	Mari A. Faistenhammer
Boehringer Ingelheim, Ltd.	K.D. Wichmann
Boise Cascade Corporation	Ann Ritter
Boston Gas Company	Susan Horwitz
Burns International Security Services, Inc.	Craig A. Bussey
H.E. Butt Grocery Company	Andrea Patton
Central Illinois Light Company	Harold W. Wissink
CF Industries	William G. Eppel
Citicorp Credit Services, Inc.	Mary Ann Allison
Clearfield Job Corps	John W. Jeppson
Connecticut General Corporation	I. Gail Howard
Conoco, Inc.	H.W. Swaim
Creative Interchange	Arthur E. Worth
Creative Universal	Fredrick W. Wicks
Dayton's Company	Mitch Hammer
Detroit Bank Corporation	Linda Conat
Domino's Pizza, Inc.	Donald E. Dufek
Dover Corporation/Elevator Div.	Joe Jenkins
Dow Chemical, USA	Willard B. Maxwell
Eastern Air Lines, Inc.	Lewis W. Lash
Eastman Kodak	Mabelle I. Parrinello
Electronic Data Systems Corporation	Bob Hunsberger
Electronics Association of Calif.	Erik R. Lindstedt
Elk Corporation	Forrest Reynolds
Employers Mutual Companies	Charles Summers
EM	Ken Haff
Entex, Inc.	Geralyn Burke
Equitable Savings	Lynn Hatfield
Factory Mutual Engineering	Ellen Gold

Name of Organization:	Name of Person Responding:
Farmland Industries	John Griffith
Federal Express	John R. Herbek
Federal Reserve Bank	W.L. Thompson
First National Bank Atlanta	Dianne Huckins
First National Bank Cincinnati	Robert E. Schultz
Fluor Engineers & Constructors, Inc.	Enrique A. Cancino
Fox & Jacobs	John G. Peiser
General Dynamics/Electric Boat Div.	E.A. Sylvia, Jr.
General Foods Corporation	Lloyd K. Davis
General Motors Assembly Division	William Herlihy
General Signal Corporation	William R. Favro
General Telephone Co. of Illinois	Alan J. Wentz
G.F. Business Equipment/Crenlo Div.	Gene Campbell
Gilbarco, Inc.	George A. Gates
Gimbels Midwest	Gail E. Stoddard
Grain Terminal Association	Irene Molitor
Harley Davidson Motor Company	James Kasper
Home Owners Warranty Company	Delores Eldridge
Informatics, Inc.	Susan Gould
ITT North Electric	James A. Cook
Kaiser Aluminum	Mike Spalding
Levi Strauss International	Betty Martin-Lewis
Los Angeles Times	Jeff Fink
Mannesmann Tally	Sue Vitale
Merck, Sharp & Dohme	Dana Gaines
Merrill Lynch	Melissa Leifer
Miles Lab., Inc./Ames Div.	J.A. Jackson
3M Company	Milton Fronsoe, Jr.
Mohawk Parthways Girl Scout Council	Sally A. Bouton
Moore Business Systems	Kirk Asplin
Morgan Guaranty Trust Company	Nicholas J. Scalzo
Morrison-Knudsen Company, Inc.	Bruce D. Zimmerman
National Bank of North America	Jamie B. Telegadis
Naus & Newlyn, Inc.	Vernon L. Hamm, Jr.
NCT	Thomas Macklin
New Wales Chemicals, Inc.	Richard T. Barnes, Jr.
NL Career Development Center/NL Industries	D.A. Kirsner
NL Chemicals/NL Industries	Dougald L. MacMillan
NTS Research Corporation	Richard J. Lamberski
Organizational Systems, Inc.	Victor M. Kline
Payco American Corporation	Jack Pachuta
Pay'n Save Corporation	Gregory Diven
Philadelphia Life Insurance Company	W.H. Turley
Pitney Bowes, Inc.	Charles H. Kinney
Pizza Inn, Inc.	Bill Curley
Ponderosa System, Inc.	William T. Pace
PPG Industries	Eli Vega
Public Service Indiana	Gail A. Morrison

Name of Organization:	Name of Person Responding:
Public Service Company of N.H.	Gary N. Arnold
Quality Control Circles, Inc.	Roma Rieker
Quiktrip Corporation	Ruth Crane
Rapidata, Inc.	JoAnn C. Dixon
Raytheon Company	R.A. Kaplowitz
Resorts International/Hotel Casino	Gilbert H. Hatcher
Shirlee Manufacturing Company	Thomas R. Koch
Shop-n-Go Markets	Stan Helmkamp
Southeast Banking Corporation	Pidge Diehl
Southern Railway System	Joseph L. Gelmini
Stouffer Foods Corporation	Joseph Girolamo
Taco Bell	James Baron
Target Stores	Jari Holland
Telemedia	Michael I. Hirsch
Tenneco Oil Company/P&M	R.H. Woods
Thiokol/Wasatch Div.	William E. Jones
Thompson Recruitment Advertising	Linda Green
United California Bank	-------
United Information Systems/United Telecom	Lyn Barrie
United Research Company	Martin C. Becker
Union Carbide Corporation	J.H. Victorson
Utah International, Inc.	William G. Aboud
Wang Laboratories, Inc.	John R. Grausam
Westinghouse Electric	Robert T. Scott
Wheat-First Securities	R. Wendell Williams
Williams Brothers Engineering	Leigh Flowe
Zale Corporation/Zale Div.	Bob Williams
Zapata Corporation	Robert A. Jones

TABLE 8.--COMPARATIVE RANKING OF COMPETENCIES BASED ON TEAM MEMBER RANKINGS

FOR TEAM MEMBERS				FOR SUPERVISORS/MANAGERS		
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
1	4.840	.410	14 -To listen effectively.	3	4.823	.495
2	4.736	.494	14f-To adapt to differing situations.	6	4.702	.570
3	4.680	.655	12e-To establish credibility with the group.	13	4.584	.825
4	4.357	.843	10g-To apply concepts of adult learning to program planning.	39	4.129	.971
5	4.352	.944	12d-To use equipment effectively.	57	3.736	1.123
6	4.344	.934	10c-To develop objectives which specifically identify intended outcomes.	33	4.238	.872
7	4.294	.964	12c-To conduct group presentations.	41	4.119	1.032
8	4.192	.859	10f-To identify appropriate presentation strategies for a task.	42	4.105	.909
9	4.183	.907	13d-To use evaluation data for program revision.	35	4.220	.815
10	4.159	.794	10a-To identify relevant audience characteristics.	48	3.904	.817
11	4.159	.814	10b-To describe prerequisite skills for a task.	52	3.816	.919
12	4.152	.959	10h-To apply theories to motivate participants.	51	3.829	1.099
13	4.152	1.078	11d-To write for effective communication, i.e. scripting, technical writing, etc.	56	3.760	1.073
14	4.112	1.002	14d-To consult effectively with subject matter experts.	30	4.282	.933
15	4.087	.996	13b-To gather data to validate programs after program has been presented (summative evaluation.)	40	4.121	.925
16	4.063	.936	11b-To make appropriate decisions regarding the use of audio or visual media.	55	3.764	1.064
17	4.040	.991	13a-To gather data describing program effectiveness during developmental stages (formative evaluation.)	44	4.088	.907
18	4.032	.903	8b-To establish communication among members of the training development team.	2	4.824	.403

TABLE 8.--Continued

FOR TEAM MEMBERS				FOR SUPERVISORS/MANAGERS		
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
19	3.984	.894	8a-To promote a favorable atti-tude toward training, education, and development among decision makers in the organization.	1	4.841	.408
20	3.952	.902	12a-To prepare specifications for organizing the physical environment.	60	3.643	1.054
21	3.912	.951	14h1-To function at awareness level with corporate goals and objectives.	4	4.806	.454
22	3.905	.959	9f-To identify nature of prob-lems, i.e. instructional, motivational, environmental.	24	4.365	.744
23	3.889	.982	10d-To identify relevant exist-ing resources for program devel-opment.	34	4.232	.805
24	3.841	1.106	13f-To design instruments to measure participants' accom-plishments.	50	3.847	.955
25	3.833	1.015	10i-To specify structural and environmental requirements for a program.	49	3.883	.972
26	3.817	1.031	11a-To prepare specifications for the production of materials.	59	3.697	1.067
27	3.795	1.120	11e8-To produce simulations, role plays, group activities.	62	3.314	1.276
28	3.762	1.127	13e-To design evaluation instru-ments to assess the effectiveness of a program.	46	4.008	.958
29	3.744	1.077	14b-To keep abreast of current theoretical thought and research directions.	29	4.288	.771
30	3.667	.980	9a-To assess needs for the development of programs.	22	4.368	.778
31	3.648	1.018	9e-To analyze performance needs.	36	4.192	.830
32	3.613	1.065	11c-To plan and monitor pro-duction schedules.	43	4.101	1.028
33	3.587	1.060	13c-To plan a comprehensive program evaluation process.	26	4.341	.771
34	3.585	1.078	13g-To evaluate the training development process.	17	4.500	.704
35	3.579	1.162	9c-To interact as a consultant with clients.	28	4.296	.871
36	3.571	.959	8d-To communicate with other sections of the organization.	5	4.706	.507

TABLE 8.--Continued

Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
	FOR TEAM MEMBERS				FOR SUPERVISORS/MANAGERS	
37	3.508	1.086	12b-To prepare specifications for the acquisition of appropriate hardware.	53	3.810	1.071
38	3.476	1.101	9b-To design instruments for conducting needs assessment (questionnaires, interview schedules, etc.)	58	3.728	1.003
39	3.472	1.168	14e-To possess subject matter expertise in content area to be developed.	63	3.185	1.157
40	3.390	1.121	10j-To use organizational development (OD) principles and practices.	45	4.074	1.022
41	3.389	1.073	10e-To determine whether to use an existing program, purchase an external program, or design a new program.	18	4.496	.679
42	3.333	1.121	14h3-To function at awareness level with concepts of marketing and sales.	37	4.189	.921
43	3.312	1.027	14a-To analyze development/training research data.	38	4.136	.874
44	3.306	1.264	14h4-To function at awareness level with concepts of production and manufacturing.	47	3.959	1.167
45	3.260	1.093	14h6-To function at awareness level with concepts of profit and loss.	25	4.352	.826
46	3.183	1.054	13h-To determine the cost benefits of training programs.	10	4.611	.645
47	3.024	1.093	9d-To establish program priorities.	11	4.608	.671
48	2.984	1.241	11e3-To produce video tapes.	65	2.598	1.118
49	2.976	1.201	11h-To evaluate the effectiveness of hired consultants.	9	4.616	.727
50	2.966	1.203	14h2-To function at awareness level with types of business ownership.	54	3.793	1.138
51	2.944	1.173	8k-To train others to function as instructional developers.	31	4.264	.774
52	2.944	1.090	8m-To project future training needs of the organization.	12	4.592	.752
53	2.895	1.306	11e6-To produce pamphlets and brochures.	64	2.770	1.177

TABLE 8.--Continued

| | FOR TEAM MEMBERS | | | | FOR SUPERVISORS/MANAGERS | |
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
54	2.895	1.103	14h5-To function at awareness level with concept of corporate budgeting.	27	4.339	.835
55	2.889	1.045	8h-To set time and budget parameters for projects.	14	4.579	.624
56	2.877	1.230	11e2-To produce audio tapes.	67	2.492	1.130
57	2.877	1.224	11e4-To produce slide-tapes.	66	2.537	1.096
58	2.774	1.209	8l-To prepare long and short term goals for the development unit.	7	4.667	.632
59	2.734	1.148	11f-To locate outside consultants when needed.	19	4.488	.667
60	2.627	1.218	14c-To design research studies to test existing and new instructional systems.	61	3.437	1.170
61	2.579	1.038	8j-To arrange for the adoption of projects.	23	4.365	.744
62	2.568	.986	8c-To mediate differences among staff.	16	4.500	.701
63	2.533	1.287	11e1-To produce still photographs.	69	2.279	1.070
64	2.532	1.009	8f-To coordinate activities of the development unit.	15	4.548	.615
65	2.463	1.191	11e5-To produce multi-image visual displays.	68	2.339	1.037
66	2.452	1.055	8g-To acquire and manage appropriate facilities and equipment for the unit.	32	4.246	.826
67	2.435	1.170	11g-To supervise hired outside consultants.	21	4.440	.856
68	2.114	1.256	11e7-To produce programs for computers.	70	2.190	1.011
69	2.000	.933	8i-To administer the budget for the development unit.	8	4.619	.691
70	1.833	.837	8e-To establish appropriate staffing patterns for the development unit.	20	4.476	.616

TABLE 9.--COMPARATIVE RANKING OF COMPETENCIES BASED ON SUPERVISOR/
MANAGER RANKINGS

FOR SUPERVISORS/MANAGERS				FOR TEAM MEMBERS		
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
1	4.841	.408	8a-To promote a favorable atti-tude toward training, education, and development among decision makers in the organization.	19	3.984	.894
2	4.824	.403	8b-To establish communication among members of the training development team.	18	4.032	.903
3	4.823	.495	14g-To listen effectively.	1	4.840	.410
4	4.806	.454	14h1-To function at awareness level with corporate goals and objectives.	21	3.912	.951
5	4.706	.507	8d-To communicate with other sections of the organization.	36	3.571	.959
6	4.702	.570	14f-To adapt to differing situations.	2	4.736	.494
7	4.667	.632	8l-To prepare long and short term goals for the development unit.	58	2.774	1.209
8	4.619	.691	8i-To administer the budget for for the development unit.	69	2.000	.933
9	4.616	.727	11h-To evaluate the effective-ness of hired consultants.	49	2.976	1.201
10	4.611	.645	13h-To determine the cost bene-fits of training programs.	46	3.183	1.054
11	4.608	.671	9d-To establish program priori-ties.	47	3.024	1.093
12	4.592	.752	8m-To project future training needs of the organization.	52	2.944	1.090
13	4.584	.825	12e-To establish credibility with the group.	3	4.680	.655
14	4.579	.624	8h-To set time and budget para-meters for projects.	55	2.889	1.045
15	4.548	.615	8f-To coordinate activities of the development unit.	64	2.532	1.009
16	4.500	.701	8c-To mediate differences among staff.	62	2.568	.986
17	4.500	.704	13g-To evaluate the training development process.	34	3.585	1.078
18	4.496	.679	10e-To determine whether to use an existing program, purchase an external program, or design a new program.	41	3.389	1.073

TABLE 9.--Continued

	FOR SUPERVISORS/MANAGERS				FOR TEAM MEMBERS	
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
19	4.488	.667	11f-To locate outside consultants when needed.	59	2.734	1.148
20	4.476	.616	8e-To establish appropriate staffing patterns for the development unit.	70	1.833	.837
21	4.440	.856	11g-To supervise hired outside consultants.	67	2.435	1.170
22	4.368	.778	9a-To assess needs for the development of programs.	30	3.667	.980
23	4.365	.744	8j-To arrange for the adoption of projects.	61	2.579	1.038
24	4.365	.744	9f-To identify nature of problems, i.e. instructional, motivational, environmental.	22	3.905	.959
25	4.352	.826	14h6-To function at awareness level with the concepts of profit and loss.	45	3.260	1.093
26	4.341	.771	13c-To plan a comprehensive program evaluation process.	33	3.587	1.060
27	4.339	.835	14h5-To function at awareness level with the concept of corporate budgeting.	54	2.895	1.103
28	4.296	.871	9c-To interact as a consultant with clients.	35	3.579	1.162
29	4.288	.771	14b-To keep abreast of current theoretical thought and research directions.	29	3.744	1.077
30	4.282	.933	14d-To consult effectively with subject matter experts.	14	4.112	1.002
31	4.264	.774	8k-To train others to function as instructional developers.	51	2.944	1.173
32	4.246	.826	8g-To acquire and manage appropriate facilities and equipment for the unit.	66	2.452	1.055
33	4.238	.872	10c-To develop objectives which specifically identify intended outcomes.	6	4.344	.934
34	4.232	.805	10d-To identify relevant existing resources for program development.	23	3.889	.982
35	4.220	.815	13d-To use evaluation data for program revision.	9	4.183	.907
36	4.192	.830	9e-To analyze performance needs.	31	3.648	1.018

TABLE 9.--Continued

	FOR SUPERVISORS/MANAGERS			FOR TEAM MEMBERS		
Rank	Mean	Standard Deviation	Competency	Rank	Mean	Standard Deviation
37	4.189	.921	14h3-To function at awareness level with the concepts of marketing and sales.	42	3.333	1.121
38	4.136	.874	14a-To analyze development/ training research data.	43	3.312	1.027
39	4.129	.971	10g-To apply concepts of adult learning to program planning.	4	4.357	.843
40	4.121	.925	13b-To gather data to validate programs after program has been presented.	15	4.087	.996
41	4.119	1.032	12c-To conduct group presentations.	7	4.294	.964
42	4.105	.909	10f-To identify appropriate presentation strategies for a task.	8	4.192	.859
43	4.101	1.028	11c-To plan and monitor production schedules.	32	3/613	1/065
44	4.088	.907	13a-To gather data describing program effectiveness during developmental stages (formative evaluation.)	17	4.040	.991
45	4.074	1.022	10j-To use organizational development (OD) principles and practices.	40	3.390	1.121
46	4.008	.958	13e-To desing evaluation instruments to assess the effectiveness of a program.	28	3.762	1.127
47	3.959	1.167	14h4-To function at awareness level with the concepts of production and manufacturing.	44	3.306	1.264
48	3.904	.817	10a-To identify relevant audience characteristics.	10	4.159	.794
49	3.883	.972	10i-To specify structural and environmental requirements for a program.	25	3.833	1.015
50	3.847	.955	13f-To design instruments to measure participants' accomplishments.	24	3.841	1.106
51	3.829	1.099	10h-To apply theories to motivate participants.	12	4.152	.959
52	3.816	.919	10b-To describe prerequisite skills for a task.	11	4.159	.814
53	3.810	1.071	12b-To prepare specifications for the acquisition of appropriate hardware.	37	3.508	1.086

TABLE 9.--Continued

	FOR SUPERVISORS/MANAGERS		Competency	FOR TEAM MEMBERS		
Rank	Mean	Standard Deviation		Rank	Mean	Standard Deviation
54	3.793	1.138	14h2-To function at awareness level with types of business ownership.	50	2.966	1.203
55	3.764	1.064	11b-To make appropriate decisions regarding the use of audio or visual media.	16	4.063	.936
56	4.760	1.073	11d-To write for effective communication, i.e. scripting, technical writing, etc.	13	4.152	1.078
57	3.736	1.123	12d-To use equipment effectively.	5	4.352	.944
58	3.728	1.003	9b-To design instruments for conducting needs assessment (questionnaires, interview schedules, etc.)	38	3.476	1.104
59	3.697	1.067	11a-To prepare specifications for the production of materials.	26	3.817	1.031
60	3.643	1.054	12a-To prepare specifications for organizing the physical environment.	20	3.952	.902
61	3.437	1.170	14c-To design research studies to test existing and new instructional programs.	60	2.627	1.218
62	3.314	1.276	11e8-To produce simulations, role plays, group activities.	27	3.795	1.120
63	3.185	1.157	14e-To possess subject matter expertise in content area to be developed.	39	3.472	1.168
64	2.770	1.177	11e6-To produce pamphlets and brochures.	53	2.895	1.306
65	2.598	1.118	11e3-To produce video tapes.	48	2.984	1.241
66	2.537	1.096	11e4-To produce slide-tapes.	57	2.877	1.224
67	2.492	1.130	11e2-To produce audio tapes.	56	2.877	1.230
68	2.339	1.037	11e5-To produce multi-image visual displays.	65	2.463	1.191
69	2.279	1.070	11e1-To produce still photographs.	63	2.533	1.287
70	2.190	1.011	11e7-To produce programs for computers.	68	2.114	1.256

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