Major Field Techniques & Instruction Levels by Canadian Instructional Developers

by Tom Bennett

Introduction

In a 1981 issue of **Media Message** (**10**:3;16-23), a survey instrument was printed in order to identify which instructional development field techniques were being utilized to a significant degree by Canadian developers and to what extent they were being employed. Further, the researcher wanted to discover which techniques were **unfamiliar** to the population, which techniques were perceived as being **valuable** to the field of ID, and which ones were actually being **taught** to a significant degree in Canadian institutions of learning.

Aside from the above major considerations, the study attempted to ascertain if there were correlations between the level of technique use and employment areas of the survey population, between the level of technique use and the educational training of the surveyed developers, and between the level of technique use and the number of years of teaching experience of the surveyed developers.

Finally, the study culminated in a matching of the resulting major techniques (as perceived by the survey population), with various functions of a recognized instructional development model. This latter consideration resulted in a very successful matching of the major or **power** techniques with the thirteen functions of Gentry's **Management Framework Model.**[1] Realising that the results of this matching process would be best reported as distinct from the above survey considerations, the writer will focus on the Management Framework match in a subsequent article.

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Survey Population

The survey population of the study was composed of members of the Association for Media and Technology in Education in Canada (AMTEC). Specifically, the population comprised those members of the AMTEC mailing list who were **named** and connected with an educational institution or educational-interfacing organization such as TV Ontario and ACCESS Alberta. It was reasoned that such members of AMTEC would have the requisite training and employment position that would most likely require the practice of ID techniques. After being originally published in **Media Message**, the survey population was targeted by a personal mailing of the instrument and followed by two subsequent mailings. The final return was composed of 112 responses, which represented a total of 37.33%, a significantly reliable return for surveys of this nature. Computer analysis of the data was accomplished by the **Statistical Package for the Social Sciences**[2] and significance was tested at the .05 level.

The sixty (60) field techniques which appeared in the final survey, were culled from an original list of 108 techniques following a previous survey of thirty Instructional Developers identified as field experts who were currently employed in Canadian and United States universities.

Summary of Findings

In order to present the findings of the survey, the writer will present each of the nine questions that the study addressed, followed by the statistical results:

Question One:
What are the major techniques being employed by Canadian instructional developers in the field?

Finding:
Of the sixty techniques in the study, only nine (15.0%) were considered to be the major ones being used by the survey population of Canadian instructional developers: (see Table 1)

Question Two:
What is the developer's perceived level of competency with each technique?

Finding:
Of the sixty techniques in the study, the survey population of developers felt competent with the use of twenty-eight (46.7%). These techniques are ranked from 1 through 28 in Table 2.

Question Three:
What is the perceived relevancy of each technique as viewed by the developers?

Finding:
Of the sixty techniques, the population of developers felt that only twenty (33.3%) of them were relevant or valuable to the field of Instructional Development. These may be found numbered 1 through 20 in Table 3.

Question Four:
How many of the techniques are unfamiliar to the developers?

Finding:
Of the sixty techniques in the study, it was determined that fourteen (23.3%) techniques were **unfamiliar** to the survey population. These are numbered 47 through 60 in Table 2. Conversely, it was determined that 46 (76.7%) of the techniques were **familiar** to the survey population.

Question Five:
Which of these techniques are currently being taught to a significant degree of instructional development programs and teacher education programs in Canadian graduate and undergraduate institutions of learning?

Finding:
It was determined that **none** of the techniques are being taught to a significant degree in a formal manner at the institutions employing the members of the survey population. Even the highest ranking techniques only scored a mean of .63 (see Table 4).

Question Six:
Is the number of years of teaching experience relative to the use of techniques?

Finding:
With the exception of five techniques (Delphi, Instructional Analysis Kit, Micro Teaching, Program Planning Budgeting System, and Role Playing), it was determined after performing a Pearson Correlation that there is **no significant relationship** between the number of years of teaching experience and the use of techniques. Further, it may be of interest to note that of the five techniques where a significant relationship existed, none of them were deemed to be valuable to the field as reported in Table 3.

Question Seven:
Are the respective employment areas of the surveyed developers related to the level of technique use?

Finding:
In order to address this question, a one-way analysis of variance (ANOVA) was performed between the Level of Use and the Title or Present Job Responsibility of the surveyed developers. It was discovered that there was **no statistically significant** evidence to prove that a relationship existed between employment and use; however, a trend did appear which illustrated that the Administrators category had a larger mean than did the University and College Instructors category, which in turn had a larger mean than did the Teachers and Consultants category, which in turn had a larger mean than the Support Staff of Audio-visual Technicians and Librarians category. Yet, in spite of such a trend, there would exist a 26% chance of error when suggesting that a **statistically significant** relationship existed.

Question Eight:
Is the graduate and/or post-graduate education of the developers related to the level of technique use?

Finding:
An ANOVA was performed between the Level of Use score and the Level of Highest Education, and as was the case in question seven above, it was discovered that a definite **trend** appeared suggesting that the use of ID field techniques increased with the amount of education of the survey population. Yet, this was only a trend and no statistical significance may be attributed to the results of the survey as there would be a 41% chance that nay decision based upon the statistics would be incorrect.

However, it was discovered that there was a definite significant relationship between the education and the survey population's perceived Competency Levels of the techniques ($p = .0241$). Further, it was discovered that a definite significant relationship existed between the level of education and the degree to which the institutions employing the survey population teach the techniques ($p = .0002$).

Question Nine:
Are the four major categories of competency level, level of use, value of instructional development, and degree to which institution teaches interrelated?

Finding:
It was determined that a strong relationship existed among the four major categories of Competency Level, Level of Use, Value to ID, and Degree to Which Institution Teaches the Techniques.

a) The greater degree that graduate and/or post graduate institutions teach field techniques, the more familiar and competent the student developers will be with them, the more valuable they will perceive the techniques to be, and the more use they will make of them in the field after graduation.

b) The more competent that the developers are with the field techniques, the more valuable they will perceive them to be and the more use they will make of them in the field.

c) The more use that the developers make of field techniques, the more competent they will become with them and the more valuable they will perceive them to be to the field of Instructional Development.

d) The more valuable developers perceive field techniques to be to Instructional Development, the more use they will make of them, and the more competent they will become with them.

Conclusions

The following conclusions may be drawn from the findings of the study.

1. Because of the very low number of field techniques being used and the very low number of techniques being taught by the members of the survey population, it may be concluded that very few Canadian institutions are teaching instructional development techniques at the graduate and/or post graduate levels.
2. Because a relatively low percentage of field techniques are perceived to the valuable and very few techniques are being used, it may be concluded that very few Canadian institutions are teaching instructional development techniques at the graduate and/or post graduate levels.
3. Because there is a high familiarity level of field techniques but a very low significance level of techniques being taught by members of the survey population, it may be concluded that Canadian Instructional Developers are receiving their information about field techniques through formal training outside of Canada, or through their professional readings.
4. Because the survey population was familiar with a large number of the field techniques, of which they determined few were used and many were of low value, it may be concluded that there may be a number of techniques being used which were not listed on the survey sample.
5. If it may be concluded that there are a number of techniques which were not on the survey sample and as only two additional techniques (3%) were suggested by the field experts (only one from sixteen Canadian experts), it may be concluded that other field experts exist who are familiar with additional field techniques that were not included on the survey instrument, or were not members of AMTEC.
6. Because the survey population was familiar with a large number of the field techniques, of which they determined few were used and many were of low value, it may be concluded that there are a significant number of AMTEC members who are familiar with instructional development techniques but who are not actually practising instructional development activities in their professional work. In other words, a developer may know **about** a technique, but due to job orientation, s/he may not be able to develop skills with it from lack of use.
7. To the extent that the survey population was familiar with 76.7% of the techniques, valued 33.3% of the techniques, and used 15% of the techniques, it may be concluded that there is a progression of responses from familiarity, to competency, to perceived value, to usage of the field techniques. Given such, it may be concluded that the more techniques a

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developer is familiar with, the more s/he will be competent with, in turn the more s/he will perceive as being valuable, and subsequently the more s/he will use in instructional development activities.

8. Because of the successful matching of the survey techniques to the ID system model components, it may be concluded that recognized field experts are ideal developers to solicit future matchings with regard to other techniques not used in the present study.

Implications

The research findings of this study have direct implications for the field of Instructional Development in general and Canadian instructional developers in particular. The following discussion and statements presented are not necessarily supported by the findings of the study, but are considered pertinent for program implementation, program changes, and future state-of-the-art directions.

1. Wherever Canadian educational institutions are not providing ID programs, instructional developers could urge their faculties to provide such.

The above assertion is supported by a number of current developers in the field, including Braden and Terrell[1] who urge ID practitioners to actively promote their profession. Bass, Lumsden, and Dills[4] agree, suggesting that "We can no longer afford to wait idly until the world beats a path to our doors for help." In the Canadian educational arena, Powell[5] suggests that Canadian standards should be advanced and Canadian interests pursued in the field of Educational Technology, while Schwier and Wickett[6] maintain that "ID training will assist in the implementation of new styles of program delivery and it will help practitioners adopt new roles and functions". These beliefs must be **effectively** and **consistently** presented to university administrators wherein ID programs do not exist.

2. Canadian instructional developers could strive to inform the educational community in general and the elementary and secondary panels in particular of the potential benefits of instructional development activities.

In continuation of the "awareness campaign" discussed above, instructional developers could be prepared to diffuse information concerning the potential benefits of ID activities throughout the entire spectrum of education. Gustafson[7] already has admonished the profession to instruct the whole educational community concerning Instructional Development's potential, and others have warned the field not to ignore the elementary and secondary levels, including works by the previously noted Braden & Terrell and Bass, et. al. In Canada, Duke[8] offers a set of convincing arguments for the expansion of ID activities within the public school system. One such argument is the presentation of compelling evidence of cost-effectiveness. Particularly in an era of financial restraints, the promise of cost-effectiveness should be welcomed by most administrators and ID may subsequently secure a foothold in the elementary panel as a result (Wilkinson[9]; Lent[10]; Klein & Doughty[11]).

3. Canadian instructional developers should be prepared to combat the prevailing belief that instructional developers and such interfacing professionals as librarians and media specialists are expendable in an era of financial restraints.

In times of budget cuts and financial restraints, areas associated with instructional developers are often considered to be luxuries and hence expendable (Bratton[12]; Bennett[13]). Selby[14] observes that the "impression that screen education is concerned with trivia still has enormous currency", and Pipes[15] suggests that school media specialists are easy targets for staff cuts; Cooper[16] makes a similar assertion with regard to library personnel. Regardless of the value and worthwhile nature of these programs, many services have been crippled due to government funding cuts (Lee[17]). This is a major problem that must be addressed by developers. The government must be urged to provide funding for entire processes of instructional design and implementation, rather than just seed money for establishing new programs without concern for continuation. Developers must be prepared to **prove** that instructional development is not a passing fashion, but rather a viable force for preventing, as well as solving instructional problems (Davis[18]). One method of insuring this recognition is to institutionalize the field of Instructional Development in Canada. Examples will be presented in the following two implications.

4. A Credentials Committee could be formed in Canada in order to define and certify practicing instructional developers.

In order to attain the level of recognition that Canadian instructional developers need, as discussed above, they must be prepared to formulate a committee whose job it will be to identify the competencies, methodoligies, and tasks of the profession. Bass, Lumsden, and Dills[19] have noted a similar organization in the United States, while pertinent discussions on instructional development competen-

TABLE 1

LEVEL OF USE

RANK	TECHNIQUE	MEAN	S.D.
* 1	Feedback	1.86	1.15
* 2	Brainstorming	1.70	1.02
* 3	Field Test	1.68	1.19
* 4	Needs Assessment	1.67	1.10
* 5	Long-Range Planning	1.66	1.05
* 6	Multi-Image/Multi-Media	1.62	1.01
* 7	Questionnaire	1.60	1.09
* 8	Literature Search	1.54	1.15
* 9	Flowcharting	1.51	1.02
10	Story Boarding	1.50	1.13
11	Sequencing of Objectives	1.49	1.13
12	Checklists	1.41	1.03
13	Management by Objectives	1.41	1.12
14	Formative Evaluation	1.38	1.18
15	Task Analysis	1.37	1.20
16	Summative Evaluation	1.35	1.18
17	Bloom's Taxonomy	1.29	1.07
18	Content Analysis	1.29	1.14
19	Case Studies	1.25	1.06
20	Interviewing Users	1.24	1.21
21	Computer Search	1.18	1.05
22	Appraisal Interview	1.15	1.09
23	Discovery Technique	1.11	1.08
24	Criterion Referenced Meas.	1.10	1.09
25	Simulation (Gaming)	1.06	1.06
26	Authoritative Opinion	1.01	1.05
27	Cost-Benefit Analysis	1.00	1.10
28	Role Playing	.99	.98
29	Computer Assisted Instruct.	.96	.96
30	Programmed Instruction	.96	.89
31	Behaviour Modelling	.92	1.02
32	Standarized Tests	.92	.98
33	Learner Vertification & Revision	.88	1.12
34	Micro Teaching	.86	.99
35	Likert Scale	.80	1.07
36	Technical Conference	.79	1.02
37	Contract Plan	.79	.97
38	Program Plan. Budget. System	.78	1.04
39	Gagne's Taxonomy	.78	.95
40	Program Eval. Review Tech.	.77	.93
41	Linear Programming	.66	.90
42	Critical Path Method (CPM)	.53	.85
43	Krathwohl's Taxonomy	.47	.86
44	Function Analysis	.47	.83
45	Observation Interview (eg. Time-Motion Studies)	.46	.72
46	Instructional Analysis Kit	.42	.85
47	Cognitive Mapping	.41	.77
48	Discrepancy Evaluation	.41	.70
49	Information Mapping	.38	.76
50	Critical Incidents Technique	.37	.76
51	Nominal Group Process	.37	.76
52	Stake Model (Evaluation)	.37	.75
53	In-Basket Technique	.34	.68
54	Decision Tables	.34	.67
55	Delphi Technique	.33	.68
56	Card Sort	.33	.64
57	Shaping	.30	.70
58	Mathetics	.28	.71
59	Force-Field Analysis	.27	.60
60	Gannt Chart	.25	.68

(* = Major Field Techniques)

TABLE 2

COMPETENCY LEVEL

RANK	TECHNIQUE	MEAN	S.D.
* 1	Multi-Image/Multi-Media	2.20	.99
* 2	Feedback	2.08	1.12
* 3	Needs Assessment	2.08	1.12
* 4	Brainstorming	2.07	.96
* 5	Story Boarding	2.06	1.21
* 6	Questionnaire	2.03	1.10
* 7	Long-Range Planning	1.98	1.10
* 8	Field Test	1.96	1.14
* 9	Flowcharting	1.90	1.10
* 10	Management by Objectives	1.88	1.17
* 11	Bloom's Taxonomy	1.49	1.14
* 12	Checklists	1.84	1.15
* 13	Literature Search	1.84	1.23
* 14	Programmed Instruction	1.82	1.11
* 15	Formative Evaluation	1.76	1.27
* 16	Role Playing	1.35	1.06
* 17	Sequence of Objectives	1.71	1.23
* 18	Summative Evaluation	1.71	1.27
* 19	Standardized Tests	1.65	1.10
* 20	Case Studies	1.24	1.17
* 21	Computer Search	1.60	1.17
* 22	Micro Teaching	1.60	1.18
* 23	Task Analysis	1.59	1.24
* 24	Content Analysis	1.58	1.17
* 25	Interviewing Users	1.57	1.31
* 26	Discovery Technique	1.53	1.15
* 27	Appraisal Interview	1.52	1.19
* 28	Criterion Reference Meas.	1.52	1.20
29	Simulation (Gaming)	1.49	1.19
30	Computer Assisted Instruct.	1.46	1.08
31	Cost-Benefit Analysis	1.34	1.17
32	Behaviour Modelling	1.29	1.10
33	Authoritative Opinion	1.26	1.11
34	Program Eval. Review Tech.	1.23	1.20
35	Contract Plan	1.21	1.14
36	Gagne's Taxonomy	1.20	1.21
37	Program Plan. Budget. System	1.18	1.22
38	Linear Programming	1.13	1.19
39	Learner Vertification & Revis.	1.13	1.21
40	Likert Scale	1.06	1.22
41	Technical Conference	1.00	1.15
42	Critical Path Method (CPM)	.88	1.14
43	Observation Interview (eg. Time-Motion Studies)	.87	.99
44	In-Basket Technique	.79	1.07
45	Cognitive Mapping	.78	1.01
46	Krathwohl's Taxonomy	.77	1.09
+ 47	Delphi Technique	.41	1.03
+ 48	Shaping	.71	1.04
+ 49	Card Sort	.71	1.06
+ 50	Function Analysis	.64	1.00
+ 51	Information Mapping	.63	1.01
+ 52	Discrepancy Evaluation	.63	1.02
+ 53	Instructional Analysis	.57	1.03
+ 54	Decision Tables	.56	.94
+ 55	Critical Incidents Technique	.54	.96
+ 56	Nominal Group Process	.53	.93
+ 57	Stake Model (Evaluation)	.49	.88
+ 58	Force-Field Analysis	.47	.89
+ 59	Gannt Chart	.45	.93
+ 60	Mathetics	.39	.84

(* = Significant competency among surveyed developers)
(+ = Unfamiliar to surveyed developers)

cies may be found within the works of Bratton[20], Silber[21], and the Task Force on ID Certification[22]. The creation of a Credentials Committee in Canada could be executed by an Instructional Development Special Interest Group, within AMTEC.

5. A communications network could be formed between and among Canadian Instructional Developers.

One of the prime objectives of the Division of Instructional Development (DID) within the Association for Educational Communications & Technology (AECT), is the facilitation of communication among instructional developers, both on a person-to-person basis and through written communication (Bass, et. al.[23]). This concept not only serves to share ideas and practices, but to institutionalize the profession, one of the requisites for attaining the needed recognition that has been discussed above. A special interest group of instructional developers should be operationalized within AMTEC. It would naturally follow that such a group could formally codify its aims and objectives, identify and define its competencies, and thence certify its members. A special section in the **Canadian Journal of Educational Communication** and/or a regular news letter would then tend to cement its membership by opening a communications network among those Canadian professionals who are practising instructional development activities.

Conclusion

The foregoing has presented a summary of the findings of this study. From those findings, a set of conclusions were drawn concerning the state-of-the-art of Instructional Development in Canada. The work has concluded with a presentation of five implications for the future of ID in Canada. It must be noted that Instructional Development in general and field techniques in particular could play a major role in the present and future directions of education in Canada. However, developers must be prepared to assert their professionalism, both in terms of **who they are** as well as **what they can do,** in order to assure their due recognition and worth, particularly in these times of financial restrictions.

FOOTNOTES

[1] Gentry, C.G. "A management framework for program development techniques." **Journal of Instructional development,** 1980-81, **4**(2), pp. 33-37.

[2] Nie, N.H. Hull, C.H. et.al. **Statistical package for the social sciences** (2nd ed.). New York: McGraw-Hill, 1975.

TABLE 3

VALUE TO INSTRUCTIONAL DEVELOPMENT

RANK	TECHNIQUE	MEAN	S.D.
* 1	Feedback	2.11	1.20
* 2	Long-Range Planning	1.98	1.14
* 3	Needs Assessment	1.97	1.18
* 4	Field Test	1.96	1.23
* 5	Brainstorming	1.92	1.01
* 6	Multi-Image/Multi-Media Pres.	1.90	.99
* 7	Story Boarding	1.78	1.19
* 8	Computer Assisted Instruct.	1.77	1.16
* 9	Flowcharting	1.75	1.10
* 10	Literature Search	1.71	1.20
* 11	Sequencing of Objectives	1.71	1.26
* 12	Formative Evaluation	1.69	1.29
* 13	Questionnaire	1.63	1.12
* 14	Bloom's Taxonomy	1.60	1.20
* 15	Content Analysis	1.60	1.24
* 16	Management by Objectives	1.59	1.12
* 17	Computer Search	1.58	1.18
* 18	Criterion Reference Meas.	1.56	1.23
* 19	Task Analysis (Task Desc.)	1.55	1.28
* 20	Summative Evaluation	1.51	1.24
21	Interviewing Users	1.43	1.29
22	Case Studies	1.42	1.18
23	Appraisal Interview	1.41	1.24
24	Programmed Instruction	1.39	1.00
25	Micro Teaching	1.36	1.16
26	Checklists	1.35	1.05
27	Discovery Technique	1.33	1.13
28	Simulation (Gaming)	1.31	1.17
29	Standarized Tests	1.30	1.06
30	Role Playing	1.27	1.08
31	Cost-Benefit Analysis	1.23	1.15
32	Learner Vertification & Revis.	1.19	1.28
33	Behaviour Modelling	1.16	1.14
34	Authoritative Opinion	1.12	1.14
35	Gagne's Taxonomy	1.06	1.16
36	Contract Plan	1.05	1.07
37	Prog. Eval. Review Technique	1.05	1.29
38	Program Plan. Budget. System	1.00	1.12
39	Likert Scale	.95	1.15
40	Technical Conference	.94	1.08
41	Linear Programming	.85	.99
42	Cognitive Mapping	.84	1.13
43	Critical Path Method (CPM)	.79	1.04
44	Observation Interview (eg. Time-Motion Studies)	.70	.90
45	Krathwohl's Taxonomy	.65	1.03
46	Discrepancy Evaluation	.63	1.01
47	Function Analysis	.62	.97
48	Delphi Technique	.62	.92
49	Critical Incidents Technique	.54	.95
50	Information Mapping	.53	.93
51	Shaping	.53	.93
52	Decision Tables	.53	.86
53	Instructional Analysis Kit	.52	.97
54	In-Basket Technique	.49	.68
55	Nominal Group Process	.48	.90
56	Stake Model (Evaluation)	.43	.85
57	Gannt Chart	.38	.82
58	Mathetics	.38	.81
59	Force-Field Analysis	.37	.79
60	Card Sort	.36	.71

(* = Value to Instructional Development)

TABLE 4

DEGREE TO WHICH INSTITUTION TEACHES

RANK	TECHNIQUE	MEAN	S.D.
1	Multi-Image/Multi-Media	.63	1.06
2	Formative Evaluation	.63	1.13
3	Feedback	.60	1.11
4	Summative Evaluation	.56	1.05
5	Literature Search	.54	1.04
6	Bloom's Taxonomy	.53	.96
7	Standardized Tests	.52	.96
8	Computer Assisted Instruct.	.51	.95
9	Criterion Reference Meas.	.50	.97
10	Story Boarding	.49	.96
11	Task Analysis	.49	.93
12	Needs Assessment	.48	.88
13	Questionnaire	.46	.92
14	Sequence of Objectives	.46	.92
15	Long-Range Planning	.46	.89
16	Field Test	.45	.94
17	Micro Teaching	.43	.89
18	Programmed Instruction	.43	.85
19	Simulation (Gaming)	.43	.85
20	Brainstorming	.41	.79
21	Management by Objectives	.38	.76
22	Discovery Technique	.37	.81
23	Flowcharting	1.59	.77
24	Content Analysis	.37	.77
25	Role Playing	.37	.75
26	Interviewing Users	.36	.81
27	Case Studies	.36	.79
28	Computer Search	.35	.78
29	Learner Verification & Revision	.34	.83
30	Gagne's Taxonomy	.33	.74
31	Behaviour Modelling	.32	.71
32	Likert Scale	.31	.77
33	Checklists	.29	.68
34	Linear Programming	.28	.71
35	Appraisal Interview	.28	.65
36	Krathwohl's Taxonomy	.26	.73
37	Authoritative Opinion	.26	.69
38	Program Eval. Review Technique	.26	.68
39	Contract Plan	.26	.61
40	Cost-Benefit Analysis	.21	.57
41	Cognitive Mapping	.18	.56
42	Critical Path Method (CPM)	.17	.50
43	Delphi Technique	.16	.48
44	Instructional Analysis Kit	.15	.57
45	Information Mapping	.14	.50
46	Program Plan. Budget. System	.13	.46
47	Stake Model (Evaluation)	.13	.45
48	Discrepancy Evaluation	.13	.45
49	Technical Conference	.13	.43
50	Critical Incidents Technique	.13	.41
51	Decision Tables	.12	.46
52	Shaping	.12	.44
53	In-Basketg Technique	.11	.39
54	Function Analysis	.10	.40
55	Observation Interview (eg. Time-Motion Studies)	.09	.32
56	Mathetics	.08	.38
57	Nominal Group Process	.08	.36
58	Gannt Chart	.07	.29
59	Card Sort	.06	.24
60	Force-Field Analysis	.04	.19

[3] Braden, R.A. & Terrell, W.R. "The challenge from within: Some unpopular views on instructional development topics." In R.K. Bass & D.B. Lumsden (ed.), **Instructional development: the state of the art,** Columbus, Ohio: Collegiate Publishing, 1978, p. 229.

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[5] Powell, A.J. "Canada's involvement in standards for education & training equipment & systems." **Media Message,** 1979, **8**(4), p. 23.

[6] Schwier, R.A. & Wickett, R. "Roles for instructional development in adult education." **Media Message,** 1981, **10**(4), p. 23.

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