

Toward a comprehensive research framework on training and development in business and industry†

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Training and development, as one sector of lifelong education, plays an important role in the development of people and organizations. But in spite of its importance we have only a limited understanding of the interrelations of all the issues that have been raised in this sector during the past decades. This is partly due to the fact that there is only limited agreement on the research agenda for training and development of human resources in organizations. In this article we present both an approach to establish a set of priorities for such a comprehensive research agenda, and a proposal for such an agenda for research on training and development in business and industry. Preliminary results of a survey, content analysis, trainers' inventory, trends analysis and case studies were documented into a consultation document that was offered to a nominal group of 21 policy makers, training managers and other training practitioners. This group analysed a research proposal consisting of analytical propositions and accompanying candidate research questions. Three classes of research questions are distinguished: strategic, applied and fundamental. Within these categories 26 of the 35 stated research questions appeared to be of high priority. The remaining nine research questions are rated as of intermediate importance. None of the questions appeared to be considered irrelevant. We conclude this article by pointing out the most promising research areas in the field of training and development in business and industry by comparing our findings with those of Alden (1982): the contribution of training and development to organizational effectiveness, the access and mobility of people from target groups in the organization, cost-effectiveness of alternative approaches, the integration of training and development in human resource planning, success and failure factors in HRD interventions, labour relations in relation to training and development, and the impact of training and development on management development. We join Dopyera and Lay-Dopyera (1985) in calling for more experimental and quasi-experimental research, to produce knowledge about a series of causal relationships. This requires the availability of valid indicators of effectiveness of training and development interventions.

During the past few years the Dutch Institute for Research in Education commissioned a study on training and development in business and industry in The Netherlands. This study is more or less comparable with the survey of Saari *et al.* (1988), although its scope was not restricted to management training and education. The whole field of training and development in business and industry in all its aspects and at all job levels was included. The objectives of the study were fourfold: (i) to give a representative picture of the participation, provision and costs of this field of study; (ii) to describe the

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trends in this field of study; (iii) to analyse problems in organizations regarding their training and development effort; and (iv) to generate a comprehensive research programme proposal on training and development in The Netherlands for the 1990s. This study was carried out by the Department of Education of the University of Twente in conjunction with the Central Bureau of Statistics.

Theoretical framework

Training and development in organizations was hard to define as many terms are used for related concepts such as:

- employee training (Carnevale and Goldstein 1983);
- employee training and development (House 1967);
- human resource development (Nadler 1980, 1984, Nadler and Wiggs 1986);
- industrial training (see the *Journal of European Industrial Training*);
- industry training (see the subject index of the AERA directory);
- personnel training (Hinrichs 1976);
- training (Goldstein 1980, Romiszowski 1981);
- training in the workplace (Marsick 1988);
- training within industry (Craig 1987).

Some authors use certain concepts interchangeably (see Camp *et al.* 1986). The definitions of these terms vary with regard to the intentionality and the typologies of learning activities. The latest conceptualizations of the field of study show a tendency towards learning through reflection on action (Schön 1983, 1987) or critical reflectivity of the learner (Marsick 1988), the integration of the organization's competitive and human resource strategy (Lengnick-Hall and Lengnick-Hall 1988) and information management (Romiszowski 1990).

In some definitions spontaneous learning is excluded as is any learning that is not related to specific organizational strategy or deliberate management objectives. We think that this very real variety of phenomenon must be reflected in the definition of the concept of training and development in organizations. We have therefore proposed the following working definition (Mulder 1990).

Training and development in organizations is a provision that is aimed at creating learning processes that contribute to the performance of workers and organizations directly or indirectly.

Because the modalities of training and development in organizations are very different it is hard to formulate an exclusive operational definition of the concept, but the following questions must be taken into account. Is the training and development:

- (a) organized within the framework of organizational goals?
- (b) a solution to an identified problem?
- (c) intended for the employees?
- (d) related to the present job or the future job or is there no direct relationship?
- (e) aimed at learning new competencies?
- (f) initiated by the employer or the employee?
- (g) totally financed by the organization?
- (h) regulated by public authorities?

Data source, methods and techniques

The major parts of the study consisted of: surveys, content analysis, trainers' inventory, pilot-study trends, organizational information trends, administrative information trends, explorative case studies, comparative case studies, and a nominal group for generating and validating a research programme proposal.

Several data sources and techniques were used. Two surveys were carried out: one on participation, provision and costs (sample size = 5000 organizations; useful response = 2481 organizations) and one on qualitative characteristics (sample size = 211 organizations; useful response = 113 organizations). Training and development directories were analysed to determine the content of internal courses provided by business and industry (sample size = useful response = 100 courses of 10 of the largest companies). A trainers' inventory was used to describe certain characteristics of in-house trainers and the courses they deliver (sample size = 78 trainers, useful response = 57 trainers). A pilot-trend study was carried out to evaluate the content of the instrument that would be used in the following parts of the study. Respondents in different organizations were telephoned and interviewed (sample size = useful response = 112 organizations). Interviews were held with representatives of large organizations to collect empirical evidence about trends and to determine relationships between various developments. Training and education managers of different large organizations were interviewed (sample size = useful response = 17 organizations). Furthermore, key persons in the field of the national administration regarding training and development in business and industry, such as state departments, social partners and educational associations, were interviewed to collect data on the policy of the different actors in this field (sample size = useful response = 15 organizations). Two case studies were carried out to explore relationships between contexts of a training and education function in organizations, the organization of this function and curriculum policy (sample size = useful response = two organizations). Four further case studies were carried out in more detail to compare cases regarding propositions generated and specified during the exploratory case studies (sample size = useful response = four organizations).

The preliminary output of the major elements of this study was converted into a consultation document which was discussed during a nominal group session of six hours, to generate and to validate a series of research questions that should form the core of a comprehensive research programme proposal (sample size = useful response = 21 persons) (see Figure 1 for an overview).

Results and conclusions

In this section we shall present elements of the research proposal regarding training and development in organizations. For other results on participation in courses by sector of economic activity and company size (by number of employees); participation in courses by content categories (e.g., technology, automation, marketing and management) by sector of economic activity; participation in courses by content categories and course duration; job profiles of training and development managers, course supervisors, instructors, personnel officers; trends and developments; problems in training and development in organizations; needs assessment methodologies carried out by companies; course evaluation methodologies carried out by companies; transfer

1. *Survey*
Two surveys were carried out; one on participation, provision and costs ($N = 5000$; response = 3291) and one on qualitative characteristics ($N = 211$; response = 113).
2. *Content analysis*
The objective of this study was to determine the content of internal courses provided by business and industry ($N = 100$ courses of 10 of the largest companies).
3. *Trainers' inventory*
The goal of this inventory was to describe certain characteristics of in-house trainers and the courses they deliver ($N = 78$, response = 57).
4. *Pilot-study trends*
This pilot test was intended to evaluate the content of the instrument that would be used in the following parts of the study. Respondents in different organizations were telephoned and interviewed ($N = 112$).
5. *Organizational information trends*
This part of the study was intended to collect empirical evidence about trends and to determine relationships between various developments. Training and education managers of different large organizations were interviewed ($N = 17$).
6. *Administrative information trends*
This part of the study was aimed at the collection of data about the policy of different actors in the field of national administration regarding training and development in business and industry, such as ministries, social partners, and educational associations ($N = 15$).
7. *Explorative case studies*
The goal of these case studies was to explore relationships between the context of the training and education function in organizations, the organization of this function and curriculum policy ($N = 2$).
8. *Comparative case studies*
The objective of these case studies was to compare cases in more detail regarding the propositions that were generated and specified during the explorative case studies ($N = 4$).
9. *Nominal group for research programme proposal*
The preliminary output of the major elements of the study was converted into a consultation report which has been discussed by a nominal group to validate a series of research questions that should form the core of a research programme proposal ($N = 21$).

Figure 1. Major parts of the study

of learning methodologies carried out by companies, see Mulder (1990) and Mulder and Luijendijk (1990).

First of all we shall look at the framework for research in training and development issues. This will be followed by a description of the data collection approach. Finally we will present the results, which are the elements of the research proposal. This research programme proposal could be used as the main body of an international research programme (Mulder *et al.* 1989).

The research framework can be constructed using several categories. Combination of such categories results in matrices in which research questions can be positioned. We distinguished different categories, beginning with the level of the system of interest.

Several systems levels are defined by Cantley and Sahal (1980), and Romiszowski (1981). Using such levels, the interrelatedness of training and development issues and problems in organizations can be clearly demonstrated. System levels are:

- market;
- sector of economy;
- organization;

personnel department;
 training department;
 course;
 lesson;
 learning activity;
 learning step.

The second possible dimension on which training and development can be positioned is the object of study. This can be:

policy;
 management;
 organization;
 design/development;
 implementation;
 evaluation.

Other dimensions result in interrelated categories (see Figure 2).

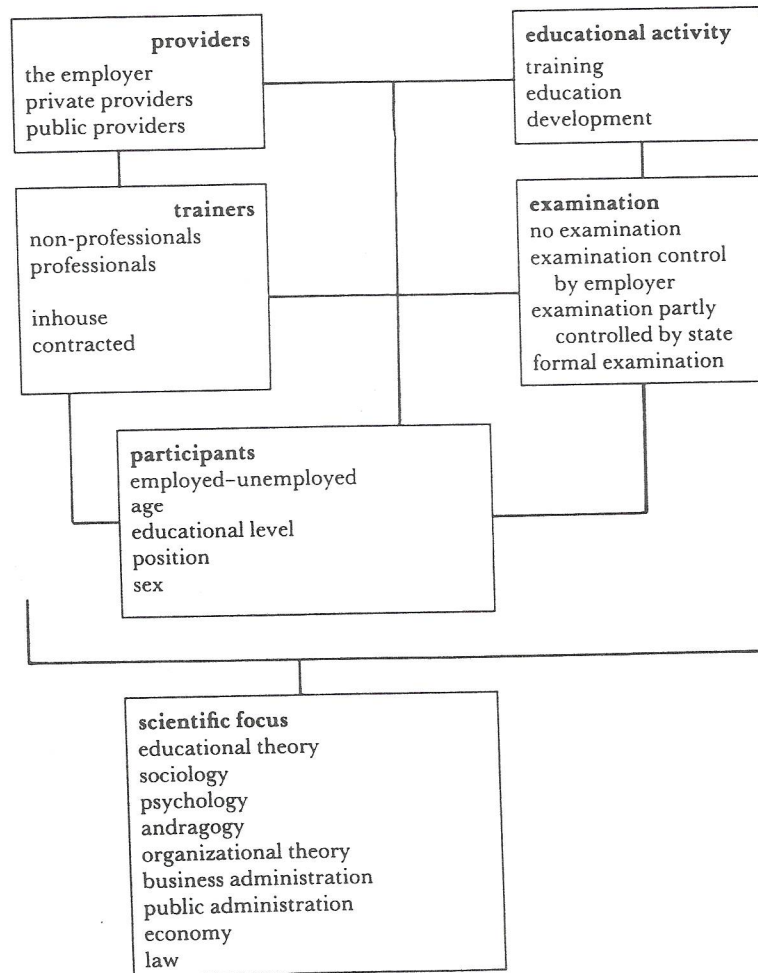


Figure 2. Dimensions of training and development

Apart from these categories, studies on training and development in business and industry can spring from three domains of problems: policy, practical and theoretical problems, calling for three interrelated domains of research: strategic, applied and fundamental research. By strategic research we mean decision-oriented research; applied research is technological, meaning that it contributes to problem solving, and fundamental research is explanation oriented.

It will be clear that combining all dimensions with each other results in an enormously complex set of interrelations, each indicating a promising specific domain for research. Within the limitations of our study we could not elaborate all different combination patterns of dimensions, so we chose the formal dimensions, structuring the research field into a matrix comprised of research type and system level. In this way we have created a comprehensive framework in which various meaningful relations between variables can be studied (see Figure 3).

Research type	System level			
	supra	macro	meso	micro
Strategic	1	2	3	4
Applied	5	6	7	8
Fundamental	9	10	11	12

Figure 3. A comprehensive research framework on training and development in business and industry

Cells 1 to 12 are described broadly, without claiming to present a comprehensive and mutually exclusive set of final definitions. When working out research issues it becomes clear that some of the cells are very difficult to separate from each other. The descriptions, and later the classification of research issues, have to be seen against this background.

WHAT (decision oriented)

1. Strategic labour-market research related to training and education, the macro-economic role of training and development.
2. Strategic organizational research related to training and development, the relation of training and development and performance and climate within the organization.
3. Policy research aimed at the policy and organization of training and development, the intermediary position of the training department between organizational strategy and performance.
4. Policy research related to the content and design of instructional situations, the relation between goals and results of instructional efforts.

HOW (technological oriented)

5. Research into market and sectoral characteristics related to training and

- education, and the conditions under, and the way in which learning opportunities can be attuned to these characteristics.
6. Research into the compatibility between the characteristics of the organization and training department, the conditions under, and the way in which, learning opportunities can be attuned to these organizational characteristics.
 7. Research into the characteristics of organizational models of the training department, and strategies and tactics to implement these models.
 8. Research into approaches, strategies and tactics of curriculum and instructional design, development, implementation, and evaluation in organizations.

WHY (explanation oriented)

9. Research into the interrelations between characteristics of training and development in organizations and societal developments.
10. Research into the relations between characteristics of the organization on the one hand and training and development on the other.
11. Research into the relations of characteristics of the training department on the one hand, and training and development practice on the other.
12. Research into the effects of the training and development effort indicated by learning results of different sub-populations of participants, changes in individual and organizational performance.

With this framework in mind we organized a consultation meeting. This group received the preliminary results of the survey, the trend study and two case studies mentioned earlier, to prepare the group discussion. The main task during the nominal group session was to rate research statements on an agreement scale and research questions on a priority scale. Twenty-one key persons were invited from different state departments, social partners, associations and the training and development field. The composition of this group was somewhat biased towards the category of policy makers, although a test of differences of scores of policy makers and practitioners appeared not to be significant, so enabling us to combine the data of both groups.

The research statements and research questions were derived from parts of the study, which are indicated in Figure 1. They were localized in the matrix that was described earlier: three research types were distinguished: strategic (decision oriented), applied (technological), and fundamental (explanation oriented), and four system levels: supra (the wider system of the organization), macro (the organization as the wider system of the training function), meso (the training function in the organization), and micro (the instructional process). The list to be completed by the participants consisted of 21 statements and (sub) questions, and is presented below.

Cell 1. Strategical-supra

1. Public-private forms of cooperation:

- 1a. Many companies make use of public financial funds and provisions to make possible the training of their own employees. In some cases this means making use of various subsidies, in other cases companies utilize existing educational infrastructure.

- 1b. Which are the most promising forms of co-operation between the private and the public sector concerning professional and job-oriented adult education?
2. *European research concerning alternative structures for corporate training and the economic importance of these efforts:*
 - 2a. Within the European Community there is a clear view on the structure of professional training (obtained from the activities of the European Center of Vocational Training, the Cedefop in Berlin). However, the structure of corporate training (or, more generally, of the post-initial professional and job-oriented training) is not completely known. In several countries of the EEC research similar to that of our project is being carried out, into the scope of the economic structural policy and educational policy of the EEC. It is important to have a clear view on the variations of the structure of corporate training in countries of the EEC and on the economic consequences of these efforts.
 - 2b. Which variations of the structure of corporate training exist in countries of the EEC?
 - 2c. What is the economic consequence of corporate educational efforts in these countries?
3. *Corporate training as an instrument for employment training:*
 - 3a. Companies sometimes make use of subsidies for the training of the unemployed. Several European official bodies, such as local institutions, national ministries, and European bodies such as the European Social Fund give subsidies for the long-term unemployed, ethnic groups looking for work, the unemployed with a low level of schooling and re-entrants.
 - 3b. Is corporate training a promising instrument for integration of the unemployed in the process of employment?
 - 3c. If yes, how can this instrument be developed further?

Cell 2. Strategical-macro

4. *Organizational changes and training:*
 - 4a. Companies also change as a consequence of continuous changes in society. Demographic, juridical and technological changes, for example, have influence on the organization of companies, and on the qualitative and quantitative training needs of existing and new personnel. Employees with working experience need continuous in-service training, and employees without working experience have to be trained to fit the specific jobs - always keeping in mind that companies themselves are continuously subjected to change.
 - 4b. How can corporate training best contribute to the changing organization?
5. *Management development:*
 - 5a. Many companies give great importance to development of the knowledge and skills of their managers, expecting that this will contribute to the efficiency and effectiveness of the firm.
 - 5b. Which type of training directed towards the development of management is of importance for the organization?
6. *Policy, regulations and subsidies:*
 - 6a. Companies do not have a clear view of the policy, regulations and subsidies

existing in the field of professional and job-oriented adult education. The whole sector of training is very splintered where policy regulations and subsidies are concerned. To achieve an adequate involvement of companies in professional and job-oriented training it is essential to obtain a clear view on the many facets of the three aspects mentioned above.

- 6b. Which organizations determine policy concerning vocational and corporate education and training?
- 6c. What are the regulations for vocational and corporate education and training at the moment?
- 6d. Which possibilities of subsidies concerning vocational and corporate training and education can be distinguished?
- 7. *The providers of job-oriented training for adults:*
 - 7a. The provision of job-oriented adult education in the sector is very varied. However, there is no complete picture of this provision, which makes it difficult for companies to make a weighted choice.
 - 7b. Who are the providers of training, courses, seminars, company simulations and practicals?
- 8. *Training for corporate trainers:*
 - 8a. The schooling of corporate trainers is very diverse, varying from junior vocational education to higher education. Their education in training is also very varied, with the same degree of dispersion. Within companies trainers have diversified responsibilities, having only one common trait: they train employees and a certain amount of teaching knowledge and skills is necessary.
 - 8b. What is the desired amount of teaching knowledge and skills that corporate trainers should possess?

Cell 3. Strategical-meso

- 9. *Cost-effectiveness:*
 - 9a. Corporate training is quite expensive. Taking into account all types of training and development, firms invest several billion dollars in human capital. However, the exact costs are not known and management of the firms seem to be unable to produce these data. Yet this information is required more often now that the training departments clarify the costs and profits of their efforts. A thorough cost-effectiveness inquiry should be directed towards the gathering of data on a number of situations.
 - 9b. Which cost and profit indications can be distinguished in corporate training?
 - 9c. How should the administration of training departments be organized so that the cost-effectiveness data can be calculated in an efficient way?

Cell 4. Strategical-micro

- 10. *Contracts in the external training circuit:*
 - 10a. One of the characteristics of the external market of training is that contracts are made between individual participants or companies and the responsible suppliers. This phenomenon offers promising possibilities for the optimization of the improvement of quality, and it offers the consumer the possibility to guide the content and design of instruction.
 - 10b. Which are the possibilities offered by training contracts for improving the

content and design of instruction, and therefore the quality of instructional processes?

Cell 5. Applied-supra

11. *Technology transfer and training:*

- 11a. New technologies have great impact on the required competency structure of company employees in almost all kinds of business. The application of new technology has consequences for the in-service training of existing personnel. However, it is not so clear in what way schooling can be designed for rapidly changing and new functions, since existing forms of job analysis are not sufficient in this case. In the literature the desirability of job synthesis is sometimes mentioned in this context.
- 11b. In what way could job synthesis take shape?
- 11c. How valuable are they for the required skill repertoire of employees who are confronted with new technologies?

Cell 6. Applied-macro

12. *Structural co-ordination possibilities between education (initial) and training (post-initial):*

- 12a. Even today there is no structured co-ordination between initial professional education and post-initial educational provisions, neither at the secondary, or at the tertiary level. Curriculum co-ordination has not been achieved yet between the various sectors, levels, suppliers and customers.
- 12b. Which configuration of consultation exists between the suppliers and client organizations?
- 12c. Which variations are desired?

Cell 7. Applied-meso

13. *Competency research of corporate trainers:*

- 13a. The term 'corporate trainer' comprises a differentiated group of functionaries with diversified backgrounds, schooling, work experience and jobs; they do not all teach only groups or individuals. The following sub-populations can be distinguished: training managers, course managers, trainers, theory lecturers and practical instructors. Organizations with big training departments, besides those mentioned above, will also have specialists in, for example, curriculum development, development of instruction, media production and development of texts, as well as professionalization of trainers, and staff functionaries for educational policy and research.
- 13b. What are the tasks of these functionaries?
- 13c. What should be their ideal job profile (as specified by their superiors)?
- 13d. What is their own opinion on their job profile?

Cell 8. Applied-micro

14. *Evaluation methods and techniques:*

- 14a. In the area of corporate training pleas for more evaluation are very often heard. Nevertheless, in many corporate training programmes only superficial opinion ratings take place among the participants, in which they are merely asked about their impression of the course as a whole and about the usefulness of the offered learning topics. This omission can be partly ascribed to a lack of adequate methods and techniques of evaluation.

- 14b. Under which conditions is evaluation useful and feasible in corporate training?
- 14c. Which methods and techniques of evaluation are functional in corporate training?
15. *Methods and techniques for needs assessment:*
- 15a. In the literature about corporate training needs assessment is assumed to be very important for effective training. But also, in practice, there is a plea for a better link between training and the educational needs of the participants. In spite of this only sporadic educational needs assessments take place. This omission can be partly ascribed to a lack of adequate methods and techniques for needs assessments in companies.
- 15b. Under which conditions is needs assessment useful and feasible for corporate training?
- 15c. Which methods and techniques for needs assessment are functional in the context of corporate training?
16. *Instrumentation and instructional processes:*
- 16a. Auto-instructional systems (such as programmed instruction, CAI, 'interactive' video systems) can be of importance for companies with many expensive, similar training programmes, or for companies of a strong decentralized nature and with a continuously changing product and service assortment.
- 16b. Under which conditions are auto-instructional systems useful and feasible for corporate training?

Cell 9. Fundamental-supra

17. *International literature research:*

- 17a. The problem of corporate training is not a purely national concern. There is a very vast literature on the subject. A summary of the international literature on corporate training provides a fine basis for further scientific research.
- 17b. What profound research is being done on corporate training?

Cell 10. Fundamental-macro

18. *Corporate training and career development:*

- 18a. Companies expect new employees to fit exactly a previously specified job profile. At the same time they appreciate flexibility of the employee in order to make future changes in jobs possible. There is thus an expectation that employees will keep developing themselves through training.
- 18b. What is the significance of corporate training (and other forms of professional and job-oriented education) for the career development of employees? (For this research it is necessary to gather biographical data of employees, and eventually also of employers.)

Cell 11. Fundamental-meso

19. *Co-ordination of training and human resource management:*

19. Many people believe that training policy and human resource management are a necessity. Some go as far as to claim that training policy is a subset of human resource management. However, in practice this co-ordination does not seem to be achieved so easily.

- 19b. Under which conditions is co-ordination of training and human resource management desired?
- 19c. Which variations exist in the co-ordination of training and human resource management?
- 19d. Which are the most useful co-ordination possibilities of training and human resource management?

Cell 12. Fundamental-micro

20. *Quality improvement of professional and job-oriented adult education (PJAE):*

- 20a. A frequent problem of PJAE is the sometimes lamentable quality of the supply. The problems are ascribed to many factors, such as bad tuning between the content of the course and the starting situation of the participants, bad correspondence between the content of the courses and the problems encountered in the working situation, weak agogic-didactical qualities of the trainers and the lack of a functional methodology for evaluation.
- 20b. Which learning outcomes are achieved in PJAE?
- 20c. Which possibilities are there to improve the quality of PJAE?
21. *Characteristics of adult employees and the consequences for corporate training:*
- 21a. Adults learn in a different way from younger people; the learning of employees differs from the learning of people looking for employment.
- 21b. Which characteristics of adult employees are important conditions for development and implementation of educational programmes in PJAE?

Table 1. Frequency distribution of scores on statements

Questions	Frequencies					Mean	S	Topic
	++ (1)	+ (2)	+ - (3)	- (4)	- - (5)			
Strategic								
1A	0	11	8	2	0	2.6	0.7	partnerships
2A	0	15	5	1	0	2.3	0.6	structure-economy
3A	6	12	1	2	0	2.0	0.9	labour
4A	15	6	0	0	0	1.3	0.5	organization development
5A	6	11	2	2	0	2.0	0.9	management development
6A	10	5	4	1	1	2.0	1.2	jurisdiction
7A	9	5	5	2	0	2.0	1.0	providers
8A	9	8	2	0	1	1.8	1.0	qualification of trainers
9A	10	9	1	1	0	1.7	0.8	cost-effectiveness
10A	8	6	6	1	0	2.0	0.9	contracts
Applied								
11A	5	13	2	0	0	1.9	0.6	technology-transfer
12A	4	10	5	2	0	2.2	0.9	initial-post-initial
13A	8	10	3	0	0	1.8	0.7	competence study
14A	9	8	3	1	0	1.8	0.9	evaluation
15A	7	9	4	1	0	2.0	0.9	needs assessment
16A	10	7	4	0	0	1.7	0.8	instrumentation
Fundamental								
17A	4	7	10	0	0	2.3	0.8	literature study
18A	8	11	2	0	0	1.7	0.6	career development
19A	6	4	7	2	1	2.4	1.2	personnel administration
20A	5	6	7	2	0	2.3	1.0	quality improvement
21A	7	8	4	0	1	2.0	1.0	adult learning

Table 2. Frequency distribution of scores on research questions

Questions	Frequencies					Mean	S	Topic
	++ (1)	+ (2)	+ - (3)	- (4)	-- (5)			
Strategic								
1B	8	8	4	1	0	1.9	0.9	partnerships
2B	2	8	6	4	1	2.7	1.1	structure
2C	4	8	4	4	1	2.5	1.2	economic impact
3B	6	10	0	4	1	2.2	1.2	unemployed
3C	5	8	4	2	2	2.4	1.2	training instrument
4B	12	8	0	1	0	1.5	0.8	organization development
5B	8	9	2	2	0	1.9	0.9	management development
6B	5	7	5	3	1	2.4	1.2	policy factors
6C	5	6	5	4	1	2.5	1.2	jurisdiction
6D	5	8	4	4	0	2.3	1.1	subsidies
7B	7	4	5	4	1	2.4	1.3	providers
8B	9	6	3	2	1	2.0	1.2	instructional competence
9B	12	6	1	1	1	1.6	0.8	cost-effectiveness indicators
9C	6	7	4	2	1	2.3	1.2	records
10B	4	5	6	6	0	2.7	1.1	training contacts
Applied								
11B	5	11	3	1	0	2.0	0.8	job analysis
11C	4	11	4	1	0	2.1	0.8	competence profile
12B	3	6	8	4	0	2.6	1.0	decision making
12C	5	3	7	4	1	2.7	1.2	desired modalities
13B	2	7	8	3	1	2.7	1.0	task analysis
13C	2	6	8	4	1	2.8	1.0	ideal task profile
13D	2	5	7	6	1	3.0	1.1	perceived task profile
14B	12	7	2	0	0	1.5	0.7	evaluation conditions
14C	12	6	2	0	1	1.7	1.0	evaluation methods
15B	8	9	3	1	0	1.9	0.9	needs assessment conditions
15C	7	8	4	1	1	2.1	1.1	needs assessment methods
16B	10	5	3	2	1	2.0	1.2	self-instructional systems
Fundamental								
17B	1	10	7	3	0	2.6	0.8	literature research
18B	6	7	5	2	1	2.3	1.1	career development
19B	6	5	5	3	2	2.5	1.3	personnel policy
19C	6	4	6	3	2	2.6	1.3	attunement modalities
19D	6	5	5	3	2	2.5	1.3	attunement sensitive
20B	6	6	3	5	0	2.4	1.2	learning results
20C	6	7	4	2	1	2.3	1.2	quality
21B	5	11	3	2	0	2.1	0.9	adults

The results of the nominal group are presented in Tables 1 and 2 with frequency distributions of scores on statements and questions.

The data depicted in Tables 1 and 2 regarding agreement with research statements and priority of research questions show the perceived importance of the whole research proposal. They were disseminated at the beginning of the second part of the consultation meeting, and were the input for three parallel small-group discussions. The aim of these discussions was to interpret the data, and to provide additional argumentation, explanation or amendments. The results of the parallel discussions were presented and discussed in the final plenary session, which was audio-taped. The final research proposal was constructed from the transcriptions of the plenary sessions. This final proposal showed only little variation compared with the data depicted in

Tables 1 and 2. In fact no changes in priority of research questions were suggested, but many of the research questions were specified and provided with additional comments or specifications.

The research questions which received priority, and are therefore part of the final research programme proposal, are described here.

- What are the most promising partnerships between public and private organizations in relation to initial vocational training on the one hand and post-initial training and development in organizations on the other?
- What is the economic significance of the training and development investments?
- Are training and development activities effective as instruments for maintaining employment?
- Is the regulation of vocational training and training and development in organizations cost-effective?
- How are quality assessments of external courses carried out and in what way can these assessments be improved?
- To what degree are existing databases on training and development activities provided by private organizations compatible?
- What is the vocational profile of training and development personnel and what are their desired competencies?
- Which cost and benefit indicators can be distinguished for training and development in organizations?
- In what way is it possible to create job and task syntheses for existing rapidly changing jobs, or for future as yet undefined jobs?
- What is the value of these syntheses for the necessary competencies of employees who are confronted with new technologies?
- Under what conditions is evaluation of training and education in organizations relevant and viable, and which strategies for evaluation are functional?
- Under what conditions is needs assessment for training and development relevant and viable, which strategies are functional and what decision-making processes play a role therein?
- Under what conditions are self-instructional systems for training and development relevant and viable? What psychological factors play a role therein?
- To what extent do training and development contribute to the achievement of better performance in the jobs of the employees in organizations?
- In what way is the training and development policy in the organization tuned to the strategic corporate policy?
- What learning results are achieved through training and development activities?
- What opportunities are there for improving the quality of training and development in organizations?
- What characteristics are important for consideration during the design, development and delivery of instructional activities for adults in organizations?

An international forum could analyse this preliminary proposal for research on training and education in organizations and create a valid proposal for research on training and development in business and industry.

Conclusions

If we look again at Table 2, we see that the maximum positive mean score can be 1.0, and the maximum negative mean score 5.0. If we divide this scale into three ranges, a positive, a neutral and a negative range, we can define these ranges as 1.0 to 2.5, 2.5 to 3.5, and 3.5 to 5.0 respectively. It is interesting to see that 12 of the research questions fall into the range of mean scores of 1 to 2.5. The rest of the mean scores fall somewhere in the range of 2.5 to 3.5, which is neither positive, nor negative. The overall conclusion of this study is that the research proposal is predominantly positively received by the nominal group.

It is interesting to compare these results a posteriori with the ASTD Invitational Research Seminar of the beginning of the 1980s (Alden 1982). The ASTD seminar resulted in eight issues, which seemed to be most promising for the field of human resources development (HRD). These issues were:

1. the interactive effects of organizations, groups and individuals on organizational effectiveness;
2. improving access and mobility of people in organizations;
3. HRD functions and organizations;
4. justifying HRD: the cost/benefit issue in context;
5. the role of HRD in human resource planning;
6. success and failure factors in HRD interventions;
7. HRD activities and organized labour;
8. the role of the line manager in HRD.

Although we did not analyse the questions that appeared to be most relevant thus far in our study, compared with that of Alden (1982), partly because of the differences in the validation approach, the correspondence between the results is striking, however. Six of the eight ASTD issues clash with high priority research questions. We found that:

- issue 1 clashes with question 18b (2.3);
- issue 2 clashes with question 4b (1.5);
- issue 4 clashes with question 9b (1.6);
- issue 5 clashes with question 19b (2.5);
- issue 6 clashes with question 14b (1.5);
- issue 7 clashes with question 1b (1.9).

This means that both studies show that organizational effectiveness, mobility of special target groups, cost/benefit issues, HRD in the human resource planning context, effectiveness of HRD interventions, and the employees' organization's stake in HRD were, and still are, of great importance.

ASTD research issues 3 and 8 are related to our research questions 12a to 13d. They are about the HRD functions, organizations, professionals, competencies and the role of the line manager in HRD. The corresponding research questions from our study show 'neutral' relevance, probably because the ASTD study 'Models for Excellence' (McLagan and Bedrick 1983, Sredl and Rothwell 1987) also had its impact in The Netherlands.

A research question that was not given as much attention as we expected is question 5b on management development. This research question showed relatively high priority, but did not result in a separate issue in the ASTD study. Nevertheless much attention was paid to this topic in the 1980s. Schmuckler (1987) published an

evaluation of management education, training and development, Sutton (1987) presented models for developing managers, and Warner (1987) did a study on industrialization, management, education and training systems.

The research questions that resulted from our study did not take 'researchability' into account and may have to be revisited for this purpose. Research areas that have been proposed by Dopyera and Lay-Dopyera (1985) may serve as an example. Their research areas are the following:

1. What effect do alternative organizational characteristics and management practices have on performance; productivity; and organizational health, well-being, and profitability? . . .
2. What is required for managerial effectiveness when effectiveness is defined by employee performance; unit productivity; and organizational health, well-being, and profitability? . . .
3. What training (and development) strategies are especially relevant for adult learners to enhance on-the-job performance as well as generally benefit the organization? To be effective, does management training need to be presented in a different manner than technical skills training, for example? Are some kinds of instructional strategies more effective with some learners than with others? . . .
4. What outcome measures are most useful? (*op. cit.*, 360 ff).

These authors call for more experimental and quasi-experimental research, to produce knowledge about a series of causal relationships. This requires the availability of valid indicators of effectiveness of HRD interventions, and this is a requirement that should be given more attention.

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