A three-phase study was conducted to compare the cost-effectiveness of two methods for determining job profiles in the publishing business and book trade—the task inventory and the Developing a Curriculum (DACUM) process. In phases 1 and 2, the task inventory and DACUM approaches were used to identify future changes in the technology used in the publishing industry and the resultant changes in jobs in the industry. The task inventory and DACUM approaches were then compared in phase 3. Both methods realized their planned results. The DACUM process required less staff time (17.2 versus 47 days). Furthermore, the task inventory demanded research personnel who were unnecessary for the DACUM workshops. However, DACUM requires more money for accommodation and travel expenses. Although both methods achieved their goals, there were subtle differences between them. Both DACUM and the task inventory gave good overall pictures of the occupation. Yet DACUM made the new technology in the publishing occupations more visible. Moreover, the task inventory required more time and costs than did the DACUM method. Since efficiency is a key element of cost-effectiveness and since the DACUM method proved to be the more efficient method, it can be considered more cost-effective than task analysis. (MN)
COST-EFFECTIVENESS OF TWO METHODS OF JOB ANALYSIS

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1. ABSTRACT

This paper describes a comparative evaluation of two methods for determining job profiles in the publishing business and booktrade: a task inventory and DACUM. Both methods can be considered as job analysis. This evaluation refers to a cost-effectiveness analysis of these methods.

2. GENERAL INTRODUCTION

The occupational areas of publishing business and booktrade are confronted with new technology, influencing the tasks of employees in the sense of downgrading, upgrading and regrading (Spenner, 1985). The translation of these tasks into vocational education curricula presents a problem for the two educational institutes in this branch of industry. The implications and consequences of new technology for this field has led to some questions by the educational institutes such as:

1. Which technological developments occur in the publishing business and booktrade?
2. Are the technological developments already manifest in the occupational areas?
3. Do educational curricula match with future developments?
4. In which way will graduates be confronted with (new) demands on the workfloor?

Update of existing educational programs depending on technological changes in the occupational area is the leading question. Besides this practical question we also wanted to answer a scientific question: which method of job analysis is most effective and efficient in the context of curriculum development? An important problem of existing methods in The Netherlands is their duration. The Department of Education and Science is interested in an efficient method for determining job profiles as a basis for developing vocational education curricula. Educational costs and values have to be well understood and systematically considered in formulating policy. The failure to measure costs and values could indicate carelessness in the use of public funds to attain educational goals in the society's interest and in the use of human time to promote individual welfare (Frazer, Walberg, Welch & Hattie, 1987).

The first phase of the research project was carried out from March 1987 till November 1987. We used a variety of information gathering techniques to determine which developments are essential for future changes in vocations.
a) a literature study of future developments, b) interviews (n=18 representatives of companies), c) a content analysis of existing curricula and d) a task inventory (n=167 graduates)

In the second phase we used DACUM DAcum or "Developing A CurriculUM " is an approach to occupational analysis. The product of DACUM is a profile chart of a job or an occupational area and can be used as oasis for curriculum development (Norton, 1985) We have organized two DACUM workshops for the field of publishing business and booktrade. Both workshops led to job profiles (Hesse & Nijhof, 1988b)

In the third phase we evaluated two methods: the task inventory and the DACUM approach. Both methods lead to similar products: the translation of technical change to tasks of a job (Hesse & Nijhof, 1988a). We have evaluated the methods on effectiveness and efficiency.

3. THE DEFINITION OF TASK ANALYSIS

Before describing the design and results of the study we need to clarify the concepts task analysis, effectiveness and efficiency.

We used two methods of task analysis in the same branch. From various studies it is known (Carlisle, 1985, Gael, 1988) that there are a lot of methods of task analysis. The need for task analysis has long been recognized by educators. The first systematic analysis of an ongoing task was published by Taylor (1911). Other descriptions of task analysis are found in the activity analysis of Bobbit (1924) and Tyler (1934). Tyler emphasized the need for instructional objectives. Bloom (1956) agreed with the need for objectives and added that since all objectives were not unique, some methods of categorization should be possible. Gagné, Davies and others (Gagné, 1977; Davies, 1976) developed various categorization schemes and methods of analysis for deriving and structuring objectives.

Many authors write if a task analysis is specific to job training (Miller, 1976; Gael, 1983), only applicable for intellectual skill (Gagné, 1977), only as a systematic approach of training (Rummler, 1987) or only to dissect and examine educational aims (Pratt, 1983). This occurs because the techniques of analysis have been developed to fill a particular role which may be different for each analyst and which has most often been in the domain for training.

Concern with specialized techniques has lead to a variety of specialized definitions of the term task analysis in a range from a broad use " which includes setting of performance
criteria, break down of job tasks, assess instructional goals" to a narrow definition "in which task analysis is only the breakdown of performance into detailed levels of specificity"

The term "task analysis" is an unfortunate term since description, analysis and synthesis are all involved (Davies, 1973). The term "task analysis" however is used extensively by those describing a particular form of analysis. Other terms are sometimes used to describe this type of analysis (job analysis, functional analysis, PAQ etc) but most methods use essentially the same process despite the type and function of task analysis. In many methods we find the following process definition of task analysis:

1. Break the task, content, etc down into constituent elements
2. Determine the relations among those elements
3. Identify the underlying principle or optimal learning design and restructure in accordance with that principle

Any method of analysis which includes all of these steps can be considered as a method of task analysis. If a method only describes tasks without consideration of all three steps, it is a sort of technique other than task analysis.

A lot of definitions don't include the conditions of the process definitions of task analysis. Gagné's (1970) technique of hierarchical analysis is an example. The hierarchical analysis is actually research analysis rather than task analysis since specifics about breaking the entire task down to develop learning material are not included.

Merril (1985) recommends a procedure involving job analysis, procedural path analysis and knowledge analysis. He calls this procedure a structured analysis. The structured analysis approach reveals the specific steps required to perform the task, the sequence in which those steps must be performed and the hierarchical relationships between the parts of the tasks. Since there is much semantic confusion about the term task analysis it is better to group all methods which follow the process definition and use more precise terms to specify the different methods. The same has to been done for terms as occupation, job and job analysis.

In fact three types of task analysis can be distinguished. They include a topic analysis involving a detailed analysis of intellectual skills, a job analysis involving the analysis of physical or psychomotoric skills and a skill analysis which involves a analysis of psychomotor tasks. Although many methods of task analysis have been developed they have been used in isolation from each other. No attempts have been made to compare or combine analyses in the context of curriculum development.
4. EFFECTIVENESS AND EFFICIENCY

To measure the effectiveness and efficiency of the task inventory and DACUM an explanation of the terms effectiveness and efficiency is necessary. The terms effectiveness and efficiency are often used in management literature. Effectiveness in the educational situation is determined by the extent that the planned results are reached. Effectiveness can be expressed in the following formula:

\[
\text{Effectiveness} = \frac{\text{the realized results}}{\text{the planned results (goals)}}
\]

Effectiveness can only get values between zero and one. Efficiency is the ratio between results and costs. The costs are all sacrifices to reach the planned results. Efficiency can be formulated as follows:

\[
\text{Efficiency} = \frac{\text{the realization of planned results}}{\text{the costs (money and time)}}
\]

The term efficiency is not always usable. The realized results and costs can not always be made operational into a suitable measure of comparison. In our case the efficiency of methods with similar products will be compared.

Traditional experimental strategies to address effectiveness are well-established and therefore need no further elaboration. Current research integration methods, along with more scientifically sound cost techniques, allow evaluation specialists to address the question "Is it worth it?" Yet, it doesn't make much sense to consider cost when the effectiveness of the method is yet to be established. After all, if an intervention doesn't work there is little reason to consider its costs (Niemiec & Baker, 1987).

5. RESEARCH DESIGN

The central question in this study is "The comparison of the methods in view of their effects and efficiency?"

The task inventory in our project is primarily developed in the context of curriculum development. Before going any further let us clarify the concept task inventory. Gael (1983,4)
gives the following definition of task inventory: “A comprehensive list of tasks performed to accomplish a job or a set of jobs—a list that is cast in the form of a questionnaire.” Goal of the task inventory is to analyze the tasks of a job or jobs.

Our task inventory consists of nine duties and seventy-one tasks including all the tasks of jobs in the publishing industry and booktrade area. The questionnaire was distributed to 167 school leavers of educational and training institutes. The school leavers rated the frequency and relative importance of each task. We received 83 completed questionnaires (50%). The data of the questionnaires were statistically analyzed by means of the cluster analysis method. The outcomes were statistical job profiles.

The second method was DACUM. The participants of the workshop are representatives of companies in the occupational area. Important criteria for the selection of committee members according to Norton (1982) are the following: technical competence (an expert in the field), full-time employment, occupational representatives, ability to communicate, ability to cooperate as a team member, free from bias relating to training methods, full-time commitment to the DACUM workshop. Instructors and teachers are not invited because they are not free from bias to training methods. In our project we have formulated the following group criteria equally divided to geographical area, sex, age and size of business.

Two DACUM workshops were set up for the publishing industry and booktrade. The participants of each workshop (n = 9; n = 11) were asked to discuss the duties and tasks of the chosen occupation. The final task and duties were used to develop the DACUM chart.

Questionnaires on the DACUM workshop were answered by members of the workshop. The questionnaire consisted of questions about: personnel data, motives for participation in the workshop, the perception of the group process, judgment of the DACUM procedure, and the DACUM chart. Also, the execution of the DACUM workshop was observed and recorded on videotape for further analysis of the group process. Both methods are depicted in figure 1.
We have applied a cost-effectiveness analysis for the evaluation of DACUM and the task inventory. The reason for using a cost-effectiveness analysis is that it relates the results with the costs. Cost-effectiveness analysis assumes that only methods with similar or identical goals can be compared and a common measure of effectiveness can be used to compare them. In our case, we have fulfilled both criteria.

The ingredient of resource method of Levin (1984) is used to calculate the costs of the methods. It involves detailing of every ingredient. The value of this method is that it makes explicit what previously had only been implied. It is therefore more scientific than other methods.

6. RESULTS

We will describe the results in view of the following questions:

1. Is there a deviation between the planned and realized results of the methods?
2. Are there differences between the methods with regard to the spending of time and costs?
3. What is the relation between the spending of time and costs and the results?

The first question concerns the effectiveness of the methods. The second refers to a comparison of time and costs of the methods. The last question concerns the efficiency of the methods.

Figure 1 Methods, information gathering techniques and results
6.1 The Effectiveness of the Methods

Both methods have realized their planned results. Since the methods of task analysis lead to similar products, we could compare the methods on the following criteria: a complete picture of the occupation, a complete picture with regard to the impact of new technology, identification of general areas, the specific translation of new technology into tasks (Hesse & Nijhof, 1988a).

A complete picture of the occupation
The DACUM charts (see appendix 1 and 2) and the cluster analysis (appendix 3a and 3b) give both a complete picture of jobs in the booktrade and publishing industry.

A complete picture with regard to the impact of new technology
The DACUM method gives us a complete picture of the impact of new technology and in the way it is incorporated in tasks (appendix 1 and 2). The cluster analysis doesn't give us a complete picture of the impact of new technology specific in case of the publishing jobs. The impact of new technology is conducted on only two general areas of the publisher, those being “operating on software” and “programming in computer languages” (see appendix 4).

Identification of general areas (duties)
The general areas of DACUM-chart “publisher” emphasizes management (six areas) and new technology (five areas). The cluster analysis of the occupation “publisher” differs from the DACUM chart. It has only two areas in management and two areas in new technology (see figure 2). The DACUM-chart “bookseller” emphasizes management areas (5 areas) while new technology is incorporated in the existing areas. The task inventory pays little attention to management (2 areas) and new technology in comparison with the DACUM chart.
### Figure 2 General areas of DACUM and the task inventory

**The specific translation of new technology into tasks**

In the DACUM chart "publisher" the tasks of the general areas "new technology as tool for the process of publishing" and "the relationship of new technology with publications" have now become part of the occupation. The impact of new technology in the DACUM chart is particularly incorporated in the tasks of the duties of "editorial realization of publishing plans", "technical realization of publishing plans" (the production) and "selling of publishing plans" (publications) (see appendix 1, DACUM chart, "publisher").

The cluster analysis involves the impact of new technology with regard to the following duties to operate on software and to program in computer languages. The DACUM chart "bookseller" is the only product in which new technology is translated into tasks of the following duties: purchase products, sell products, draw up an information plan and assess a safety plan (see appendix 2).

To put it briefly, DACUM and the task inventory give both complete picture of the occupation. Yet DACUM makes new technology in tasks of the occupation more explicit.

**The DACUM chart**

The quality of the DACUM chart will also be determined by the the perception of DACUM participants besides other influencing factors. We used a questionnaire to get information about the perception of the DACUM chart. We asked the DACUM participants (n = 20) after

<table>
<thead>
<tr>
<th>General areas</th>
<th>DACUM</th>
<th>Task</th>
<th>General areas</th>
<th>DACUM</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publisher</td>
<td></td>
<td></td>
<td>Bookseller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>6</td>
<td>2</td>
<td>Management</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Editor process of</td>
<td>1</td>
<td>1</td>
<td>Sell products</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>publishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production of</td>
<td>1</td>
<td>1</td>
<td>Purchase products</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>publishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>-</td>
<td>2</td>
<td>Administration</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>New technology</td>
<td>2</td>
<td>2</td>
<td>Safety/security</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Window display dressing</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Incorporation of new</td>
<td>3</td>
<td>-</td>
<td>Incorporation of new</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>technology (operating</td>
<td></td>
<td></td>
<td>technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>on software and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>modern media)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
the DACUM workshop about their opinion concerning the completeness of DACUM chart resp. duties and tasks and the inclusion of all technological developments. All participants stated that the DACUM chart covers all duties and tasks of jobs in the publishing industry and booktrade. The DACUM participants shared the opinion that all future developments are included in the DACUM chart.

6.2 A Comparison of Time and Costs

The second question concerns the differences between the methods with regards to the spending of time and costs. Since we have performed two DACUM workshops and one task inventory, we have divided the costs and time of the workshops by two. An overview of the time used by the personnel gives table 2. First we will discuss the data of each method, subsequently the two methods will be compared (see table 1).

The spending of time

Although one DACUM workshop has a duration of two days, the arrangements before and after the workshop take up time of the supervisor, the coordinator, the chairman and the assistants. Arrangements before and after the workshop in our case concerned:

- The supervisor and coordinator discuss with the representatives of educational institutes the participants for DACUM workshop, decisions about the occupational areas to be analyzed and the establishing of dates for the DACUM workshop.
- The supervisor and coordinator discuss with the chairman about the performance of the workshops.
- The coordinator and research assistants invite the DACUM participants for the DACUM workshop.
- The coordinator and research assistants make arrangements concerning the meeting room of the DACUM workshop, the reservations of hotel rooms and meals.
- The coordinator develops an agenda for the workshop and a planning scheme for the chairman.
- The chairman studies the DACUM handbook and literature of the booktrade and publishing business.
- After the workshop the coordinator edits the tasks of the DACUM chart. At least the clerical personnel adds the finishing touch to the DACUM chart.

The task inventory demands a lot of time of the researcher (30 working days) and research assistants (12 working days). The main issues of task inventory are the development of a questionnaire and the statistical processing of the data.
DACUM consumes in comparison with the task inventory less time of personnel (17.2–47 days). Furthermore, the task inventory demands research personnel which is not necessary for DACUM.

Table 1: The spending of time by the methods expressed in an eight-hour working day

<table>
<thead>
<tr>
<th></th>
<th>DACUM</th>
<th>Task inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Supervisor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 Chairman</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3 Coordinator</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4 Researcher</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>5 Research assistants</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>6 Clerical personnel</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>17.2</td>
<td>47</td>
</tr>
</tbody>
</table>

The spending of costs
The costs of the methods consist of six ingredients: personnel, office supplies and materials, accommodation and travel costs, data processing, postage and facilities. The total costs represent the value of all ingredients required for the method. The total costs are the cost for replicating the method. The distribution of costs is graphically depicted in Table 2.

DACUM spends more money on accommodation and travel costs. The accommodation and travel costs of the two workshops are specified in Appendix 5. In case of the task inventory, a lot of money is spent on the salaries (gross) of personnel.
Table 2. The costs of the methods calculated in dollars (exchange rate of 1 November 1
Dollar = 2.04 Dfl)

<table>
<thead>
<tr>
<th>DACUM</th>
<th>Task inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel costs</td>
<td>$912</td>
</tr>
<tr>
<td>Office supplies and materials</td>
<td>6</td>
</tr>
<tr>
<td>Accommodation and travel costs (workshop)</td>
<td>1255</td>
</tr>
<tr>
<td>Data processing</td>
<td>==</td>
</tr>
<tr>
<td>Postage</td>
<td>12</td>
</tr>
<tr>
<td>Facilities (building) (office room, energy maintenance)</td>
<td>125</td>
</tr>
<tr>
<td>Total</td>
<td>$2310</td>
</tr>
</tbody>
</table>

6.3 The Efficiency of the Methods

Closely allied to the effectiveness is the efficiency of the methods. Although both methods have reached their goals, their results show subtle distinctions. DACUM and the task inventory give a good overall picture of the occupation. Yet DACUM makes new technology tasks of the occupation more visible. Moreover, the comparison of both methods shows that the task inventory requires more time and costs than the DACUM method (see Table 3).

Table 3. Time and costs of the methods

<table>
<thead>
<tr>
<th>DACUM</th>
<th>Task inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>17 2</td>
</tr>
<tr>
<td>Costs (gross)</td>
<td>$2310</td>
</tr>
</tbody>
</table>

7. CONCLUSION AND DISCUSSION

The results of both methods can be used to design a curriculum, on condition that dimensions of educational psychology, pedagogic and industrial psychology will be included. Yet the product ought to be adjusted in future, dependent on the extent of new developments in publishing business and booktrade.
The results of this cost-effectiveness study show that a lot of factors influence the costs of a method. These factors are personnel costs, office supplies and materials, accommodation and travel costs, data processing, postage and facilities. Yet the factors "salaries and accommodation and travel costs" consume a great part of the budget. Although both methods have reached their planned results, DACUM is compared with the task inventory more efficient.

The current quantity and quality of research on the cost-effectiveness of educational issues is low. It is evident that even though there has been a proliferation of writings in the cost-effectiveness of education issues there has been little research on the subject (Caffarella, 1975).

Why should an administrator or policymaker be concerned with the results of cost-effectiveness analysis? The answer to this question is often that reference to such an analysis is an important source to persuade opponents.

Yet cost-effectiveness analysis can also lead to a more efficient use of educational resources: it can reduce the cost of reaching particular objectives and it can expand what can be accomplished for any particular budget.

8. REFERENCES


Carlisle, K.E. (1981). Towards a methodology for assessing consistency between multiple network matrix task analysis of the same task. (diss) Indiana University


### DRAW A LONG-TERM PLAN
- **B1. Gather existing plans**
- **B2. Analyze strengths, weaknesses, and opportunities**
- **B3. Analyze the market (the external environment of the organization)**
- **B4. Choose a share of the market**
- **B5. Orient on technical developments**
- **B6. Establish priorities of product development**
- **B7. Formulate the chances of derivative products**
- **B8. Choose a product assortment**
- **B9. Formulate start points for sale and distribution**

### DRAW A BUDGET
- **C1. Estimate the facilities**
- **C2. Draw up a long-range investment plan**
- **C3. Estimate the profit of the old and new publisher's list in the coming years**
- **C4. Draw up a promotion plan for the coming year**
- **C5. Draw up a sales plan**
- **C6. Draw up a production plan**
- **C7. Draw an estimate of the costs**
- **C8. Discuss the budget**
- **C9. Determine the exploitation budget**

### DRAW A PUBLISHING PLAN FOR EACH PRODUCT
- **D1. Perform a marketing analysis**
- **D2. Describe the content and form**
- **D3. Estimate the sales**
- **D4. Analyze derived market possibilities**
- **D5. Invite quotations for coproductions**
- **D6. Draw up a pre-production costing**
- **D7. Inquire financial support**
- **D8. Decide to publish**
- **D9. Acquisition of a manuscript**

### EDITORIAL REALIZATION OF PUBLISHING PLANS
- **E1. Design the cover**
- **E2. Perform the layout and typographic**
- **E3. Set the internal administration formalities**
- **E4. Input of data in royalty administration**
- **E5. Control the productions**

### TECHNICAL REALIZATION OF PUBLISHING PLANS
- **F1. Draw up a production plan**
- **F2. Prepare the copy for the press**
- **F3. Perform pre-pressing instructions**
- **F4. Invite offers**
- **F5. Draw up a calculation of the cost price**
- **F6. Place an order for an audio-visual producer**
- **F7. Place an order for an illustrator**
- **F8. Place an order for an audio-visual producer**
- **F9. Correct the proof**

### COMMERCIAL REALIZATION OF PUBLISHING PLANS
- **G1. Perform a definitive calculation**
- **G2. Determine the selling price**
- **G3. Test the other statistics**
- **G4. Approach the non-traditional distribution networks**
- **G5. Perform a dummy**
- **G6. Write a cover text**
- **G7. Instruct sales representatives**
- **G8. Develop promotion materials**
- **G9. Instruct the distribution centre**

### EXPLOITATION OF COPYRIGHTS
- **H1. Foreign sales**
- **H2. Deal with applications of license**
- **H3. Administer compulsory license**
- **H4. Inform foreign publishers**
- **H5. Sales copyright in behalf of audio-visual producers**
- **H6. Invite calculations of coproductions**
- **H7. Draw up a license contract**
- **H8. Inform the royalty administration**

### MANAGE THE AUTHORS
- **I1. Search new authors**
- **I2. Support authors**
- **I3. Maintain relations with authors**
- **I4. Transfer royalties**
- **I5. Keep up date with the authors' contract archives**
- **I6. Inform the authors of the exploitation of copyrights**
- **I7. Send reviews of texts to authors**
- **I8. Public relation activities in behalf of authors**
- **I9. Present authors copy to the readers**

### NEW TECHNOLOGY AS TOOL FOR THE PROCELS OF PUBLISHING
- **J1. Employ the personal computer**
- **J2. Employ software**
- **J3. Workprocess in behalf of times letters, catalog, and instruction**
- **J4. Database products addresses of public relation customers, addresses of authors**
- **J5. Acquisition of management information with assistance of the computer**
- **J6. Database in behalf of planning**
- **J7. Technical drawing on the personal computer**
- **J8. Automate the editorial section**

### THE RELATIONSHIP OF NEW TECHNOLOGY WITH THE PUBLISHING PROCESS
- **K1. Orient on means of communication**
- **K2. Determine the consequences for editorial staff, production and commerce**
- **K3. Acquisition of knowledge of distribution and marketing in behalf of the medium media**
- **K4. Exploit databases**
<table>
<thead>
<tr>
<th>ASSESS THE ORGANIZATIONAL POLICY</th>
<th>MANAGE THE ORGANIZATION</th>
<th>ASSESS SOCIAL POLICY</th>
<th>ASSESS MARKETING POLICY</th>
<th>PURCHASE</th>
<th>SELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Perform market research with regard to determine the location of the business</td>
<td>B1 Coordinate works</td>
<td>C1 Apply labour conditions</td>
<td>D1 Draw up a marketing outline</td>
<td>E1 Assess the purchasing policy</td>
<td>F1 Draw up a sales plan</td>
</tr>
<tr>
<td>A2 Consult an advisory body with regard to determine the location of the business</td>
<td>B2 Anticipate on future developments</td>
<td>C2 Recruit and select employees</td>
<td>D2 Assess publicity/promotion plans</td>
<td>E2 Select new titles for the book exhibition</td>
<td>F2 Support the sales</td>
</tr>
<tr>
<td>A3 Determine the financial conditions of the organization</td>
<td>B3 Supervise personnel</td>
<td>C3 Stimulate personnel to follow educational training</td>
<td>D3 Select the company logo</td>
<td>E3 Assess conditions of purchasing</td>
<td>F3 Train employees to use new sales approaches (methods)</td>
</tr>
<tr>
<td>A4 Draw up a long-range plan</td>
<td>B4 Control plans and budgets</td>
<td>C4 Determine job description</td>
<td>D4 Establish the organization</td>
<td>E4 Translate the purchasing policy to salesman</td>
<td>F4 Keep a sales talk</td>
</tr>
<tr>
<td>A5 Draw up a budget</td>
<td>B5 Evaluate organizational policy on a continuing basis</td>
<td>C5 Discuss the progress of works</td>
<td>D5 Report social and economical developments</td>
<td>E5 Form a collection of books</td>
<td>F5 Control the supplies</td>
</tr>
<tr>
<td>A6 Assess the organizational policy</td>
<td>B6 Adjust organizational policy</td>
<td>C6 Maintain a tasks evaluation</td>
<td></td>
<td>E6 Control the rough</td>
<td>F6 Bargain for the best price</td>
</tr>
<tr>
<td>A7 Choose the place of business</td>
<td>B7 Join a pressure group (interest group)</td>
<td>C7 Plan the career of employees</td>
<td></td>
<td>E7 Determine the ordering techniques</td>
<td>F7 Visit customers</td>
</tr>
<tr>
<td>A8 Arrange the financing</td>
<td>B8 Apply the Regulations of the Dutch Booktrade</td>
<td></td>
<td></td>
<td>E8 Select a supplier</td>
<td>F8 Perform a search procedure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASSESS SAFETY PLAN</th>
<th>DRAW UP AN INFORMATION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Consult experts</td>
<td>G1 Organize an administration</td>
</tr>
<tr>
<td>H2 Instruct employees</td>
<td>G2 Determine the purchase of tools</td>
</tr>
<tr>
<td>H3 Consider the purchase of a safety/security devices</td>
<td>G3 Organize and control the processing of goods</td>
</tr>
<tr>
<td>H4 Consult colleagues</td>
<td>G4 Assess the informational needs</td>
</tr>
<tr>
<td>H5 Carry out safety exercises</td>
<td>G5 Return books</td>
</tr>
<tr>
<td>H6 Maintain house rules</td>
<td>G6 Organize customers orders</td>
</tr>
<tr>
<td>H7 Control administrative loss</td>
<td>G7 Gather data</td>
</tr>
<tr>
<td>H8 Handle shoplifting</td>
<td>G8 Process data</td>
</tr>
<tr>
<td>H9 Do the lay out of the shop</td>
<td>G9 Analyze the results</td>
</tr>
<tr>
<td>H10 Give first aid</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3a

CLUSTER 1: RUN A BUSINESS
1. Draw up a long range policy plan
2. Control the budget
3. Draw up plans
4. Draw up budgets
5. Control plans
6. Draw up periodic costs and profits
7. Use of sale techniques

CLUSTER 2: MARKETING
1. Formulate orders for market research
2. Perform market research
3. Translate data of research into products
4. Formulate a prognosis for sale
5. Perform a plan for an information product
6. Develop a sales promotion plan
7. Draw up a plan for an information product

CLUSTER 3: DRAW UP A PROMOTION PLAN
1. Draw up an advertise/promotion plan
2. Organize an advertise/promotion plan
3. Write advertising texts

CLUSTER 4: PROGRAM IN COMPUTER LANGUAGES
1. Develop computer software
2. Use data banks
3. Discuss with market researchers

CLUSTER 5: EDIT TEXTS
1. Correct manuscripts
2. Judge manuscripts

CLUSTER 6: OPERATE ON SOFTWARE
1. Employ graphical software
2. Employ calculation software
3. Operate peripheral equipment
4. Employ word processing software

CLUSTER 7: PERFORM EASY ADMINISTRATIVE WORKS
1. Carry out type activities
2. Keep up correspondence
3. Carry out countings
4. Control countings

CLUSTER 8: ORGANIZE BILLS
1. Register bills
2. Control bills
3. Put the bills into the archives
4. Control orders
CLUSTER 9: WINDOW DRESSING
1. Draw up a plan for the shopping window
2. Select products for the shopping window
3. Dress a shopping window

CLUSTER 10: PREVENTION OF SHOP LIFTING
1. Detain suspected customers
2. Call the police
Figure a: The mean scores of two groups of respondents working in booktrade on clusters of tasks (profile 1, N = 16, profile 2, N = 14)

Figure b: The mean scores of two groups of respondents working in the publishing business on clusters of tasks (profile 1, N = 11, profile 2, N = 12)

1. cluster 1: Run a business
   cluster 2: Marketing
   cluster 3: Draw up a promotion plan
   cluster 4: Program in computer languages
   cluster 5: Edit texts

2. cluster 6: Operate on software
   cluster 7: Perform easy administrative work
   cluster 8: Organize bills
   cluster 9: Window dressing
   cluster 10: Prevention of shoplifting
Appendix 4

<table>
<thead>
<tr>
<th>Management</th>
<th>General areas</th>
<th>DACUM chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Formulate a publishing strategy</td>
<td>1 Run a business or industry</td>
<td></td>
</tr>
<tr>
<td>2 Draw up a long range plan</td>
<td>2 Draw up a promotion plan</td>
<td></td>
</tr>
<tr>
<td>3 Draw up a budget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Draw up a publishing plan for each product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Exploitation of copyright</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Manage the authors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The editorial process of publishing</td>
<td>7 Editorial realization of publishing plans</td>
<td></td>
</tr>
<tr>
<td>8 Technical realization of publishing plans</td>
<td>3 Edit texts</td>
<td></td>
</tr>
<tr>
<td>The production process of publishing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 The commercial realization of the publishing plan</td>
<td>4 Marketing</td>
<td></td>
</tr>
<tr>
<td>The selling of the publisher's list (publications)</td>
<td>7 Organize bills</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>8 Perform easy administrative works</td>
<td></td>
</tr>
<tr>
<td>New technology</td>
<td>Specific duties:</td>
<td></td>
</tr>
<tr>
<td>10 New technology as tool for the process of publishing</td>
<td>5 Operate on software</td>
<td></td>
</tr>
<tr>
<td>11 The relationship of new technology with the publications</td>
<td>6 Program in computer languages</td>
<td></td>
</tr>
<tr>
<td>The incorporation of operating on software and modern media particularly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Editorial realization of publishing plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Technical realization of publishing plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Commercial realization of publishing plans (see appendix 1 DACUM-chart publisher)</td>
<td></td>
<td></td>
</tr>
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</table>
Appendix 5

A formula of computing the costs of DACUM (two workshops)

<table>
<thead>
<tr>
<th>Item</th>
<th>Planned costs</th>
<th>Realized Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel and accommodation expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workshop publisher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/16 December 1987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotelcosts</td>
<td></td>
<td>$420</td>
</tr>
<tr>
<td></td>
<td>bed and breakfast one night $38</td>
<td>$420</td>
</tr>
<tr>
<td></td>
<td>10 participants $380</td>
<td></td>
</tr>
<tr>
<td>Travelcosts</td>
<td></td>
<td>$206</td>
</tr>
<tr>
<td></td>
<td>travelcosts round trip</td>
<td>$206</td>
</tr>
<tr>
<td></td>
<td>ten participant 500 dollar</td>
<td>$206</td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>participants and supporting personnel (16 persons)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lunch $6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two days $192 dollar</td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td>$445</td>
</tr>
<tr>
<td></td>
<td>Dinner $12</td>
<td>$445</td>
</tr>
<tr>
<td></td>
<td>Two days $384 dollar</td>
<td>$445</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1456</td>
<td>$1069</td>
</tr>
</tbody>
</table>

**Travel and accommodation expenses**

Workshop bookseller
5/6 January 1988

Hotelcosts

|                                           | $418           |
|                                           | bed and breakfast one night $40          |
|                                           | 10 participants $400                      |

Travel costs

|                                           | $292           |
|                                           | travel costs round trip                   |
|                                           | ten participants $500                     |

Lunch

|                                           | $218           |
|                                           | participants and supporting personnel (17 persons) |
|                                           | Lunch $6                                  |
|                                           | Two days $204 dollar                       |

Dinners

|                                           | $465           |
|                                           | Dinner 12 dollar                             |
|                                           | 17 x 12 dollar = $204                       |
|                                           | Two days = 408 dollars                       |

Unexpected costs

Drinks in restaurant

|                                           | $48            |
|                                           |                |

**Total**

|                                           | $1512          |
|                                           | $1441          |

The accommodation and travel costs of two workshops are $2510. The mean costs of two workshops is $1255.