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Occupational Analysis of Vocational Instructors with DACUM: A case study

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Abstract

The dizzying change triggered by technology in organizations has made it necessary to make quick and accurate decision-making in a multi-actor environment. To implement these decisions as soon as possible, it is necessary to have a high degree of integration in all units of the organization. And the staff must perform the tasks expected of them without any misstep. This situation forces the organizational systems to become compatible with their elements. Traditional task analysis methods applied in strict hierarchical institutions are criticized for requiring intensive labor, budget, time, and resources. In this traditional task analysis, the collection of information in a long process and with a lot of effort, the necessity of collecting data from a representative sample and the limited use of the collected data have triggered the need for new analysis methods. In this study, the job analysis of vocational instructors in an in-service training institution with a strict hierarchical structure was performed with DACUM (Developing a Curriculum), known as the new generation competency-based job analysis method. As a result of an analysis that lasted only one and half day; the duties, tasks, knowledge, skills of the instructors, the behaviors expected of them, the equipment they use, future trends of their occupation were revealed. With the results obtained from this study, it has been determined which critical issues will be considered in the selection of qualified instructors for the institution and in the performance evaluations of the instructors.

Keywords: Vocational instructor, DACUM, Duty, Task, Occupational analysis.

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Introduction

The transition to automation, which is accelerating due to global change, has recently made specialization in the profession more significant. The need of employers for human-power has decreased and the expectations of employees have changed. While this situation has reduced the popularity of some professions, it has caused the emergence of new professional fields. On the other hand, long-established professions bear that they be redesigned (in order not to disappear), although they maintain their existence (for now). (Gael, 1988). Vocational educators are people who provide technical skills, attitudes and behaviors in addition to basic knowledge and terminology on professional issues (Burlutskaya, 1982). In addition to the classroom environment in educational institutions, they carry out on-the-job training especially in factories and evaluate the progress of their students. When the vocational instructions containing job descriptions of institutions are examined in general, it is seen that the focus is on defining the tasks included in the job, rather than the competencies required to fulfill the tasks. It is almost impossible to elude it. Because developing technology is constantly changing the way of doing business. This steady change necessitates the constant change of task instructions. Analyzes are needed to make these updates. (Cornelius et

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al.,1979). Analysis of task instructions in hierarchical organizations is done in three ways; (1) "Interview Method", in which the form prepared for task analysis is applied by interviewing the employee face to face, (2) "Questionnaire Method" in which duties, responsibilities and competencies are determined with a series of questions, and (3) "Examining Previous Job Descriptions Method" in which previous task instructions are revised and updated. These analysis methods are criticized because they require intensive labor, budget, time, and resources (Schneider & Konz, 1989; Sanchez &Levine, 2012). Procuring suitable personnel for the job, training them on the knowledge, skills, and behaviors they will need, determining appropriate wages and evaluating the performance within the scope of the profession are among the problems that human resources have been dealing with for years (Waters & Stobinski, 2017). To handle processes involving all these basic complex situations, managers need to know the characteristics of each profession in detail. The most potent key that managers will utilize in this direction will be occupational analysis. Occupational analysis is the systematic collection of all information related to the occupation in general terms (Sanchez, 1994). This information can be obtained from the employer, employee, customer, field experts or written documents (Morgeson & Dierdorff, 2011). The data acquisition process, as it is known, is based on observation, survey, and interview methods. Brannick, Levine, and Morgeson (2007) include technical conferences, review of records, and review of legislation. While the purpose of occupational analysis is expressed by most scientists as discovering, understanding, and describing what people do while performing their jobs, Prien and Ronan (1971) believe that occupational analysis is the knowledge, skills and competencies that must be acquired in order to successfully carry out existing jobs. An occupation analysis clearly defines how the duties and tasks should be done and the job standards. An analysis not only explains the nature and characteristics of the occupation, but also illustrates the elements of the work environment, environmental factors such as physical and psychological conditions, the level of knowledge, skills and attitudes expected from the employee. (Mirabile, 1990).

According to Potochnik and McGill (2012), institutions that perform their functions with multiple personnel and manage the activities in accordance with their purpose, within a discipline determined and proclaimed by the administration, are called hierarchical structure institutions. Institutions that have used this structure since their establishment are defined as Strict Hierarchical Institutions (SHI). In SHIs, top to bottom pyramid structure is adopted. In this structuring, decisions are made according to certain rules and criteria determined from the top, rather than through personal and charismatic values. In the same way, the roles within the organization are based on ranks in the form of powers, duties, and responsibilities, free of personality (Mason, 1984). This study was carried out at an in-service training center of a SHI providing public services. In the center where the study is carried out, basic, orientation, development, completion, promotion and special task trainers are given. In the training center, there are experienced, knowledgeable, and competent vocational instructors who have worked in various units of the institution. In this center, trainings are implemented in three ways: in-class, on-the-job (practical) and hybrid (mixed) method.

The purpose of this study is to analyze the occupation of the instructors working in an SHI regarding the duties and tasks they perform in their profession. With this analysis, the aim is to determine the knowledge, skills and behaviors required for the instructing profession and to determine the trends towards the profession.

Problem Statement

What is the DACUM-based occupational analysis of vocational instructors working in a strictly hierarchical in-service training center?

Research Questions

The following research questions guided the study.

1. What are the duties of the instructor?
2. What are the tasks of each duty performed by the instructor?
3. What knowledge and skills should the instructor have?
4. What tools does the instructor use?
5. What are the expected behaviors of the instructors?

6. What are the future trends about the instructor profession?

7. What are the acronyms used by the instructor?

Method

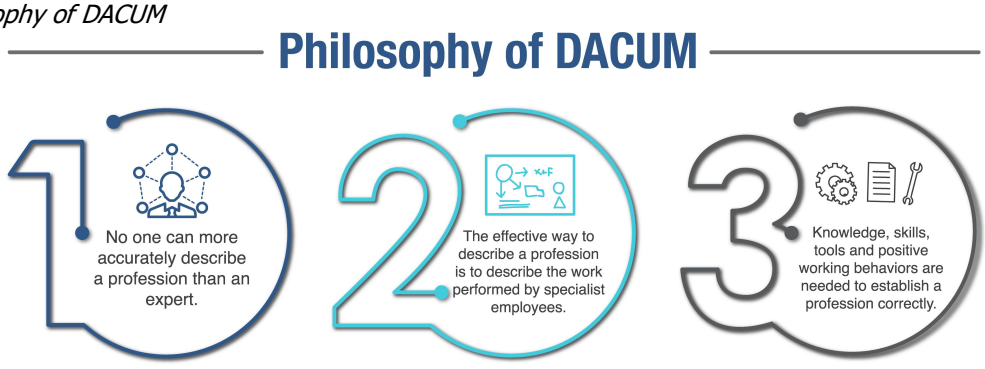
Since the objective of the study is to analyze of instructors' duties in line with the determined issues, it was designed in a qualitative method and case study pattern and look up an answer to the problem statement. Case study is a method used when the control is bounded, and the focus of study is a real-life phenomenon. It offers the opportunity to conduct in-depth analysis. It is a preferred method by researchers when digging answers to "how" and "why" questions. In case study research, a situation in real life, current context or environment is investigated (Yin, 2016). In the case study, the researcher composes detailed and in-depth information from real life through observations, interviews, materials, and documents (Creswell and Poth, 2018). The elements that make up the case study research are questionnaires, experiments, semi-experimental studies, and quantitative modeling.

DACUM analysis technique was preferred in the occupational analysis of the vocational instructors. As a case study, DACUM, a new generation analysis tool for the development of vocational-technical education curricula, differs from other methods in that it puts employees at the center of analysis. It is a quick, efficient and reasonable analysis method that bases its power on the experiences of those who practice the profession (Norton, 1987). The DACUM process analyzes a profession in all its dimensions but reduces the gaps between legislation and the execution of that profession. For these reasons, this is a structured, efficient, cost-effective, and proven approach Dixon & Stricklin, 2014) It is very suitable for working on a realistic and powerful profession analysis. The approach of this model is the collection of realistic data. This makes it a suitable method for achieving the goals of the study. DACUM is especially useful when there is a need to create a new job and to develop a new training program (Kang et al., 2012). DACUM derives its strength from group influence and focuses on the future in a collaborative way (Halasz, 1994). In the DACUM Handbook, Norton (2008) states that the DACUM vocational analysis was first applied to develop the curriculum for a women's career development program in Canada in 1960 and was subsequently gradually adopted in the United States. The feature of the method is that it determines, defines, and prioritizes the job profile, duties, and tasks under the job in just two days. The validity of the data obtained can be confirmed later with a larger sample group, as in this study.

Research Sample

This study reveals which tasks and jobs the vocational instructors working in the in-service training unit perform within the scope of their profession through DACUM occupational analysis. With this analysis, the knowledge that vocational instructors should have, the skills and the behaviors that they are expected to exhibit were revealed. The analysis also presents trends (threats and opportunities) related to the teaching profession. Norton and Moser (2013) state that the DACUM philosophy is based on three main issues as shown in Figure-1.

Figure 1
Philosophy of DACUM



There are numerous methods of occupational analysis. Vocational and Technical Education Consortium of States (V-TECS) and Functional Job Analysis (FJA) are among the leaders according to

the frequency of application (Levine et al., 1983). While V-TECS is a costly and time-consuming method and FJA loses popularity even though it offers task-oriented results and processes, DACUM requires less time, and the process is easily understood by the participants (Sherrill and Williams, 2005).

Considering the reasons mentioned above, DACUM occupational analysis method was preferred in the occupational analysis of vocational instructors in this organization. In organizations like the institution in which the study is conducted, occupational analyzes are generally conducted in line with observation studies or the opinions of field experts. In DACUM, however, the occupation is examined in all its dimensions (Willett and Hermann, 1989). On day 1 experienced participants with the knowledge and skills to perform that profession expressed their views. During the following day these views were challenged and influenced by others in both individual and focus group work often leading to a re-evaluation of these views (DeOnna, 2002).

Working Group

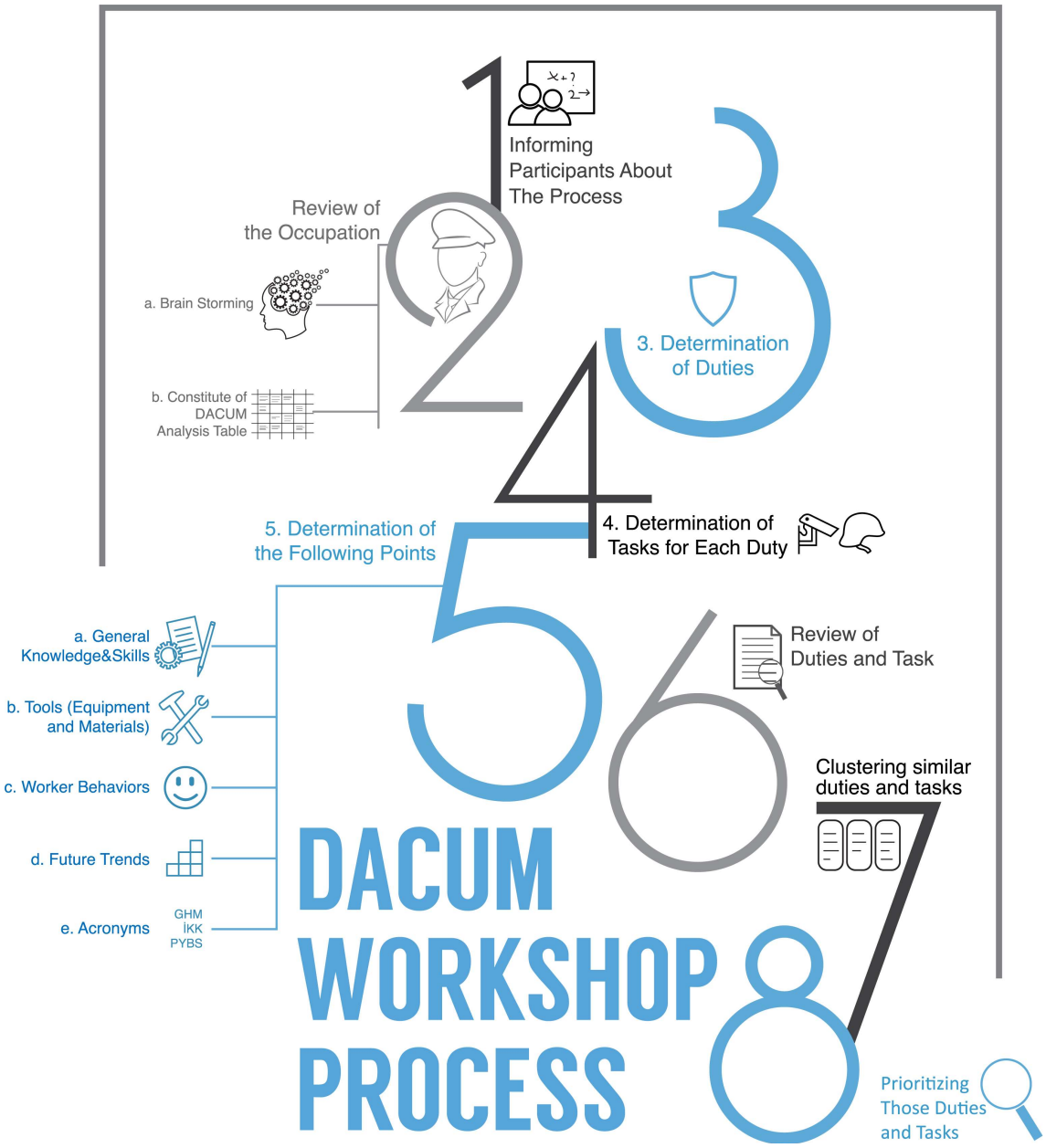
For the DACUM workshop, which was organized to conduct the occupational analysis of the vocational instructors, 11 instructor of different statuses who had been working in the institution for 7 to 12 years and who had high communication skills were identified. Eight personnel were selected, all of whom volunteered for the study. The differing geographical locations of those seven personnel was also a consideration in their selection. of the participants are female instructors, but no gender-based analysis was performed in this study. This research was conducted without receiving support from any person or institution and especially without using the budget of the institution where the study was conducted. The institution has reserved a special area to be used only during the workshop.

Prior to the workshop, written informed consent to voluntarily participate in the study was obtained from the participants. Seniority and other possible discriminatory aspects were set aside for the duration of the workshop (Norton & Moser, 2013). Participants were given an equal say during the analysis. All ideas were included in the assessment and discussed. As a result of the discussion, the group ensured that the topics on which they agreed were included in the analysis. At the beginning of the workshop, facilitators and participants introduced themselves. Then, a brief information was given about the purpose of this analysis and the DACUM method.

Data Collection

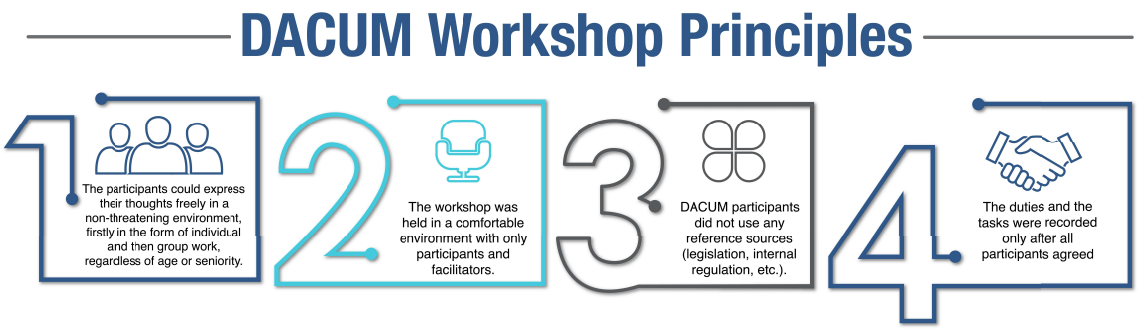
DACUM analysis was conducted during a workshop attended by selected instructors. The workshop started promptly with five DACUM facilitators, which included one team leader, and eight participants, and lasted approximately 6,5 hours. The team leader and other facilitators were highly experienced DACUM facilitators. The workshop process proceeded as in Figure-2. Although a two-day workshop was proposed, the workshop was completed in one and half day with two sessions due to other commitments of both participants and facilitators. Under the management of the four DACUM facilitators, participants first defined their understanding of the role of instructor, then analyzed and grouped the duties they performed within the scope of the profession and explained the tasks they performed for each duty.

Figure 2
DACUM Workshop Process



The facilitators helped to decipher the participants' ideas efficiently on a board and put together some aspects (again with the permission of the participants) to ensure clustering. During the workshop, the principles in Figure-3 were entirely complied with.

Figure 3
DACUM Workshop Principles



At the end of the DACUM analysis, 6 duties and 54 tasks were identified. Those tools, skills and behaviors required, acronyms used, and future trends were revealed. Participants prioritized duties in order of importance and frequency of performance.

Interviews followed with personnel who oversee supervisors and who are responsible for supervising training. The staff expressed their views on the tools and acronyms used. These views were evaluated by the vocational instructor who had participated in the workshop, reducing the duties to 5 and tasks to 45. Vocational instructor's DACUM analysis was concluded with general evaluations and participant feedback.

Findings

In this study, DACUM based occupational analysis of vocational instructors working in an in-service training unit in a SHI was conducted. The data obtained in response to the sub-problems of the research were classified within the framework of DACUM analysis. Table was prepared in accordance with the results of the workshop. Following the DACUM format, duties are placed on the left-hand side in columns, and tasks are placed on the right-hand side as shown in Table-1.

Table 1
DACUM Analysis Table of Vocational Instructors

Duty	**Task**											
A	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	
C	C1	C2	C3	C4	C5	C6	C7	C8				
D	D1	D2	D3	D4	D5	D6	D7	D8				
E	E1	E2	E3	E4	E5	E6						

Findings Related to Research Question One

The first Research Question is "What are the duties of the vocational instructor?". Six duties have been identified: A. Pre-lecture preparation, B. Classroom Management, C. Lecturing, D. Assessment and Evaluation, E. Reporting to Senior Management,

Instructors perform most of the duties they identify with analysis within the institution. When necessary, they can be outside the institution for some duties. Instructors identified their two most important tasks as "Classroom Management" and " Lecturing". This is followed by "Assessment and Evaluation", "Reporting to Senior Management" and "Pre-Lesson Preparation" in order of importance.

Findings Related to Research Question Two

The second Research Question is "What are the tasks of each duty performed by the vocational instructor?". Within the framework of the DACUM occupational analysis, 45 tasks were identified based on 5 duties. The findings of the vocational instructor's assigned tasks are given in Table 2.

Table 2
DACUM Analysis of Vocational Instructors

Duty	Task
A. Pre-Lecture Preparation	A.1 Preparing Lecture Notes
	A.2 Printing Course Notes
	A.3 Handing out Lecture Notes
	A.4 Preparing Training Aids
	A.5 Preparing a Instructor's File
	A.6 Making the Daily Course Plan
	A.7 Preparing Yourself as an Instructor
	A.8 Attending Teacher Board Meeting
	A.9 Attending Conferences and Seminars
	A.10. Giving Opinions and Suggestions Related to the Fields
	A.11 Advising the Trainees
	A.12 Writing an Article
B. Classroom Management	B.1 Ensuring in Class Discipline
	B.2 Choosing the Appropriate Teaching Strategy for the Class
	B.3 Selecting the Classroom Teaching Method
	B.4 Choosing the Appropriate Teaching Technique for the class
	B.5 Managing Unwanted Behaviors
	B.6 Ensuring Effective Communication
	B.7 Being a Role Model
	B.8 Ensuring Active Participation
	B.9 Managing Desired Behaviors
	B.10 Managing Time Effectively
	B.11 Managing Unwanted Snapshots
C. Lecturing	C.1 Explaining Course Objectives
	C.2 Explaining the Course Method
	C.3 Explaining the Concepts and Principles of the Course
	C.4 Using the Appropriate Training Technique
	C.5 Ensuring Student's Emotional Readiness
	C.6 Qualified Teaching
	C.7 Evaluating Learning Product
	C.8 Further Work with Trainees
D. Assessment and Evaluation	D.1 Pre-Testing
	D.2 Evaluating Assignments
	D.3 Preparing Exam Questions
	D.4 Making an Exam
	D.5 Evaluating Exams
	D.6 Providing Exam Feedback
	D.7 Receiving Feedback
	D.8. Invigilating
E. Reporting to Senior Management	E.1 Pre-Checking the Class Preparedness and Classroom
	E.2 Reporting Discipline
	E.3 Reporting Unexpecting Event
	E.4 Reporting Training Needs
	E.5 Providing Initial Feedback
	E.6. Coordinating a Project

When we look at the jobs determined by the DACUM analysis, it is clear that the most tasks are under the duty of "Pre-Course Preparation" with twelve. This is followed by "Classroom Management" with

eleven tasks. The duty of 'Reporting to Top Management' with the fewest tasks can be considered as a less complex set of tasks compared to others.

Findings Related to Research Question Three

The third Research Question is "What general knowledge and skills should the vocational instructor have?" Nine skills and seventeen knowledge points were identified and are displayed in Table 3 and 4.

Table 3
Required Knowledge

Knowledge
Area of Expertise
Classroom Management
Computer Applications
Educational Technologies
Emergency Applications
First Aid
Personality Profile
Psychology of Learning
Teaching Principles and Methods

Table 4
Required Skills

Skill
Agility
Establish Effective Communication
Physical Presence
Alertness
Rational
Being Planned
Cold Bloodedness
Managing Stress
Teamwork
Predisposition Towards Teaching
Representation
Punctuality
Being Open to Development and Change
Managing Time
Situational Awareness

For the instructors, nine knowledge, including "Psychology of Learning", "Teaching Principles and Methods" and "Classroom Management" and fifteen skills, "Establish Effective Communication", "Being Open to Development and Change" and "Agility" were identified. Many of those skills are also sought in institution's recruitment processes.

Findings Related to Research Question Four

The fourth Research Question is "What tools does the vocational instructor use?". The eleven tools identified and are illustrated in Table-5.

Table 5
Tools used

Tool
Adhesive Paper
Board Pen Eraser
Computer
Flipchart
Notebook
Package Programs
Presentation Remote Controller
Presentation Device
Smart Board
Telephone
White Board

Among the tools that instructors use during their work are systems such as "Computer", "Presentation Device", "Smart Board" and "Package Programs". These systems and devices are user-friendly. It is short and easy to learn.

Findings Related to Research Question Five

The fifth Research Question is "What are the expected behaviors of the vocational instructors?". Thirteen behaviors were identified and are depicted in Table-6.

Table 6
Expected Behaviors

Behavior
Being Fair
Being Insightful
Being Flexible
Being Reliable
Leading
Being Organized
Professionalism
Being Patient
Being Placid
Being Respectful
Being Caring and Considerate
Being Convivial
Being Coherent

The required behaviors identified include "Being Fair", "Being Insightful", "Being Flexible"," Being Reliable", "Professionalism", "Being Placid", "Being Convivial", "Being Organized" and "Being Coherent" demonstrating that these behaviors are expected in people who communicate directly with people in the service sector.

Findings Related to Research Question Six

The sixth Research Question is "What are the future trends for vocational instructors?". Six issues were identified and are illustrated in Table-7.

Table 7
Future Trends.

Trends
Changes in Institution's Duties
Decreasing Sector Expenditures
Development of the Institution
Effective Use of Technology
Limitation of Opportunities for Promotion
Subject to Appointment

The instructors consist of experienced staff who have worked in various positions within the institution. The development in technology causes this profession to become increasingly technology oriented. No matter how much experience the vocational instructors have, they will need to supervene the technology closely. It is clear that computers will take over many tasks performed by instructors. Vocational instructors think that promotion in a job is beneficial when personal rights (salary, lodging, etc.) are considered. The personnel policy of the institution requires a mandatory duty exchange system. Vocational instructors have the opportunity to become managers if they meet the specific and listed requirements. The growth and structural changes experienced within the institution may lead to a reappraisal of training policy.

Findings Related to Research Question Seven

The seventh Research Question is "What are the acronyms used by the vocational instructors?" Nine acronyms were identified and are illustrated in Table-8.

Table 8
Acronyms Used

Acronym
MGA
ÖĞR
EA
EDU
ÖDM
BT
MD
ME
TEL

The acronyms are known to all personnel within the organization, are frequently used in daily conversations and used in written reports.

Discussion, Conclusion, and Recommendations

In this study, the occupational analysis of the vocational instructors in an in-service training unit was made with the DACUM analysis method and the results obtained were discussed. In this case study a workshop, which used the brainstorming method, was held with the participation of personnel who employed as instructors. It has been seen once again that DACUM is a well-organized method for analyzing an occupation skill duty associated with a specific employment position or profession description. As mentioned by Reid (2003), the DACUM process can be narrowed down to a workshop with six to nine members, which is a unique sample size for occupation analysis. The fact that the

analyses are completed in such a short time with the participation of a small number of personnel and again with little effort is proof that DACUM is superior to other occupational analysis models in terms of efficiency, speed of achieving results and low cost, which was also emphasized by Dixon and Stricklin (2014).

As a result of DACUM's analysis, it reveals many aspects about the profession. This situation provides benefits to the human resources (HR) units for the stages of selecting qualified people, training them and, moreover, placing them in the right position. Precisely because of this feature, DACUM is widely accepted by many analysts in the field of HR strategies and professional behavior.

The DACUM table created by the vocational instructors is a written representation of the competence areas of the vocational instructor profession. This is how the knowledge and skills needed for this profession, the subjects that need to be learned, and therefore the minimum performance indicator for a instructor appear. The DACUM table prepared as a result of the DACUM profession analysis conducted by the vocational instructors provides an idea of the tasks performed for beginners in this profession.

At the end of the study, participants were asked to provide feedback about the study. Participants stated that taking part in such an analysis made them feel happy and useful, that they were made more aware of their knowledge and skills and that classifying their occupational duties, during the workshop, was beneficial. They stated that bringing together the scope of their work with the issues they have in performing their duties made them feel happy and valuable. They expressed that they were pleased to participate in the study, that they could express themselves freely throughout the study and that their recording of their ideas added value, contributing to their sense of corporate belonging.

With the help of the occupational analysis, all the duties and tasks performed by the vocational instructors in the training unit were identified in detail. In using DACUM occupational analysis method, implemented by the instructors themselves, the study has confirmed DACUM as the assessment tool of choice as measured in relationship to previous assessment methods. The DACUM analysis method can be performed in a short time at low cost. The most important duties of the vocational instructors were "Managing Classes" and "Lecturing". These two issues generally correspond to the priorities of an educational institution. The fact that "Other Tasks" includes the most tasks shows that the vocational instructors are responsible for carrying out very wide-ranging tasks outside the course activities. These duties are performed at various times during the daily work of the vocational instructors. The fact that all duties are taken directly from their working day is another proof that the analysis is indeed a good assessment of the occupation.

The advantage of DACUM is that it relies on them personally, who are professional specialists, to determine the skill profile that a vocational instructor needs (Willett and Hermann, 1989). However, the analysis methods currently applied in the organization are more traditional and more inward-looking. Analyzes are performed only at certain periods because they are costly and time-consuming. The developments recorded in the past time, changing needs or innovations introduced are reflected in the task definition forms too late. The DACUM table process prepared by the vocational instructors conforms to the definition of "A useful tool used to accelerate specialization in high-risk professions" specified by Kuchenbrod (2016). The expert status employees (instructors in this study) determined the necessary competencies and skills during the DACUM process and rated the minimum performance value that each candidate should exhibit to prove the competence (Adams et al., 2015). Moreover, they have achieved this at very little cost and in as little as two days. Vocational Instructors who are just starting their profession will see which areas of vocational instructors' duties are concentrated when they examine this table. They will understand in which subjects they need to improve themselves (training) and they will easily see the level of performance expected from them by this institution in a strict hierarchical structure. In the table the knowledge and skills that a vocational instructor has when he realizes you won't make an effort to repeat them, will be able to concentrate on learning another professional skill and only a pre-existing due to the requirement for an education curriculum will have to spend unnecessary time and energy.

As mentioned earlier, the occupational analyses of the vocational instructors were applied in a short time and at low cost with the DACUM analysis method. The analysis was carried out with the intensive participation of the vocational instructors in a way that gave multidimensional results.

Of course, the DACUM workshops held do not fully represent all employees. Even if the DACUM occupational analysis technique has the advantage of being performed entirely by those who are employed, its results may vary depending on the location, timing, workshop environment, experience of the participants or their personal characteristics (Dixon, & Stricklin, 2014).

The results obtained from the DACUM occupational analysis will provide data for the supply of instructors to the institution with a strict hierarchical structure. As mentioned by Mason (1984), DACUM can be used to improve the programs of educational institutions and to provide continuity in this direction. As suggested by Cookson and English (1997), DACUM can also be used as part of the performance evaluation processes to be prepared for instructors.

Such analyses that in-service training institutions will make for their personnel will provide basic data for determining the long-term strategy for personnel recruitment, training and professional career policy and personnel (Sîrbua &Pinteaa, 2014). In this way, the institution will determine its own change needs, and then it will be able to predict what the effects of these changes will be on its personnel (Singh, 2008). With the analysis, also knowledge, skills and attitudes, the lowest acceptable role or behavioral standards can be determined. This analysis will provide the organization with information on what to do, how to do it and by whom to do it for the tasks to be performed successfully.

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