International Journal of Industrial Ergonomics 68 (2018) 1–7

Contents lists available at ScienceDirect

International Journal of Industrial Ergonomics

journal homepage: www.elsevier.com/locate/ergon

Workplace accommodation for workers with intellectual or psychiatric disabilities

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ARTICLE INFO

Keywords:
Sheltered workshops
Work performance
Wage
Rehabilitation

ABSTRACT

The current study applied productivity improvement tools, e.g., hierarchical task analysis, standard operating procedure (SOP), checklist, and plant layout analysis in two sheltered workshops for the disabled to facilitate the sustainable operation of the workshops. The study was conducted in two sheltered workshops where intellectually disabled workers were trained and employed to perform cleaning tasks as janitors while psychiatrically disabled workers were trained to assemble a stationery box. On-site job analysis was conducted to find feasible workplace accommodations for both workshops. The preliminary on-site job analysis indicated the need of a standard operating procedure for the cleaning tasks in the first sheltered workshop. Therefore, SOPs were developed based on hierarchical task analysis and will be presented in a checklist format for the training and payment of the disabled. In the second sheltered workshop, flow diagram analysis of the initial assembly layout revealed excessive moving and backtrackings of material handling. Thus, a revised layout is proposed to remove all of the inefficiencies.

Relevance to industry: The current study demonstrates feasible applications of several productivity improvement tools in two sheltered workshops for disabled workers in order to enhance sustainability.

1. Introduction

According to the World Health Organization (1980), a disability is defined as any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. By the first quarter of 2016, over 1.15 million people (4.93%) of Taiwan's population were registered as disabled (Ministry of Health and Welfare, 2016). To enlarge the employment opportunities of those disabled, the People with Disabilities Rights Protection Act, issued in 2015, regulated that the private sectors whose total number of employees is 67 or more and government agencies whose total number of employees is 34 or more be required to hire at least 1% and 3% of disabled workers, respectively. Any institution which does not hire a sufficient number of disabled workers in accordance with the quota system is required to pay the subsidies to the Employment Security Fund in order to promote the employment of disabled workers.

The appropriate placement of the disabled at their workplace will give them a feeling of independence, usefulness, responsibility, and mobility. However, persons with disabilities face substantially greater unemployment rates and significantly lower wages than do persons without disabilities (Chi, 1999). According to Mallender et al. (2015), the unemployment rate of the disabled (18.3%) is almost twice that of the general population (9.9%). Three ergonomic approaches can be adopted to widen the range of jobs available for disabled individuals and to improve their working conditions. These include: (1) the selection of a suitable workplace, (2) work instruction and training, and (3) workplace design (Wieland and Schuette, 1985). To ensure disabled workers have equal access to a workplace with other regular workers, the European Community provides reasonable accommodation by removing barriers to equal opportunity, equal participation and equal performance (Mallender et al., 2015). Similarly, the Americans with Disabilities Act (ADA) requires employers in the United States to make “reasonable accommodation” in policies, practices, or procedures when such modifications are necessary to allow disabled workers to access goods, services, facilities, privileges, advantages, or accommodations (Evan Terry Associates, 1993; State Government Victoria, Department of Education and Early Childhood Development, 2003). Since 1994, the Ministry of Labor in Taiwan has promoted job accommodations ranging from the simplest and least costly, e.g., changing work procedures or

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https://doi.org/10.1016/j.ergon.2018.06.001
Received 21 December 2016; Received in revised form 14 May 2018; Accepted 1 June 2018

task reassignments to the most expensive and complex ones, such as building adaptations or developing sophisticated equipment using assistive technology (Chi et al., 2004; Clark and Kolstoe, 1990; Chi et al., 2012). Such workplace accommodations can promote equal employment opportunities, increase workers' productivity and job satisfaction, and reduce training costs of the disabled workers (Nevala et al., 2015).

Since many disabled are not or not yet capable of obtaining a job in the open labor market, "sheltered employment" in special workshops is provided in many countries (Stahl and Springer, 1996). Sheltered workshop programs are structured to accommodate the physical and mental impairment of the individual and to permit them to work at their own productive capacity and be paid accordingly (U.S. Department of Labor, 1977; Whitehead, 1979). The sheltered workshops provide facility-based day programs for work training, employment, possible transition to a regular job, and psychological, medical, and social care through performing relatively simple work activities, e.g., assembling, packing, woodworking, manufacturing, servicing, or sewing (Migliore, 2010; Luczak, 1993; Stahl and Springer, 1996).

Taylor's scientific management principle can be adopted to convert jobs performed by a skilled craftsman into a series of simplified routines which can be learned and performed by unskilled workers. Such scientific management principles can help the intellectually disabled, who may be capable of performing only one or a few of the activity elements of an operating sequence in a structured environment (Stahl and Springer, 1996). By breaking a job into elements of various levels of difficulty, an intellectually disabled worker can be trained to perform job elements that suit his/her capacity. Besides the disabled workers, the sheltered workshops also employ social workers and specially trained masters who have an education in both corresponding professions (i.e., gardener, carpenter, and mechanic) and social work (Stahl and Springer, 1996). The masters are responsible for the production planning, as well as providing education, assistance, and supervision to the disabled workers (Stahl and Springer, 1996).

According to the survey reports and statistics provided by Ministry of Labor (2010), there are about 96 sheltered workshops in Taiwan. Since the purpose is to provide meaningful employment to help persons with disabilities who have difficulty finding jobs on the open market, all sheltered workshops are non-profitable and subsidized by the government agency in some way. The majority of these workshops are small scale, with 7–12 workers (40.6%), followed by those that have 4 to 6 workers (26%). The type of activities carried out in these sheltered workshops includes selling goods (45.8%), restaurant services (32.3%), subcontracting of packaging, assembly, manufacturing, or services (31.3%). In order to maintain economic sustainability as a business, each sheltered workshop is composed of about 28.9% job coaches and 9.8% sales and marketing personnel to support about 63.6% of disabled workers. The majority of the disabled workers in the workshops have an intellectual disability (54.1%) or psychiatric disability (19.2%). Since the performance of an intellectually or psychiatrically disabled worker is often erratic and may not last the whole day (Stahl and Springer, 1996), the U.S. Department of Labor (2009) provides general principles for the Employment of Workers with Disabilities at Subminimum Wages. The Subminimum Commensurate Wage Rates must be based on the worker's individual productivity, in proportion to the wage and productivity of experienced workers who do not have disabilities performing essentially the same type, quality, and quantity of work in the geographic area from which the labor force of the community is drawn. In order to pay disabled workers fairly based on their performance and capacity, sheltered workshops must develop assessment instruments to assess the task performance and productivity of their disabled workers.

Similarly to other business units, a sheltered workshop must perform five basic management functions: planning, organizing, staffing, directing and controlling (Koontz and O'Donnell, 1972). The current research focuses on the organizing and staffing functions, and more precisely, on how to break a job into elements that can be performed reasonably well by the intellectually and psychiatrically disabled and how to pay them according to their task performance. To meet this end, task analysis, checklist, and plant layout analysis were applied in two sheltered workshops.

2. Method

The current study was supported by the Institute of Labor, Occupational Safety and Health in Taiwan to study workplace accommodations for disabled workers. The objects of our study were two sheltered workshops in Taipei City, Taiwan. The first workshop was administered by a welfare foundation for the intellectually disabled to clean a school dormitory in National Taiwan University, where intellectually disabled persons were trained and employed to perform cleaning tasks as janitors. Seven male and 5 female intellectually disabled, aged between 18 and 41 with an average age of 24 and 27 for male and female, respectively, were responsible for cleaning. The second sheltered workshop was administered by a welfare foundation for the psychiatrically disabled where psychiatrically disabled were trained to assemble pencils and other items into a stationery box package. Eight male and 6 female psychiatrically disabled, aged between 25 and 52 with an average age of 41 and 38 for male and female, respectively, served to assemble the stationery box package. Each of the sheltered workshops had two job coaches to maintain the quality of the work duties.

Before proposing any feasible workplace accommodation, the job and the disabled workers must be evaluated to identify the mismatch between the performing task and the capacity of the disabled (Chi et al., 2004). Job analysis is helpful in solving a wide range of ergonomics and rehabilitation problems including selecting appropriate jobs and adapting the workplaces to the remaining abilities of the disabled (North and Rohmert, 1981). Thus, we started off by conducting on-site job analysis of the sheltered workshops and observing disabled workers to find the most urgent accommodation needed for each workshop. Other relevant information that could lead to possible workplace accommodation was also collected, e.g., dimensional measurements and photographs for workstations if a re-layout of the workplace seemed feasible.

3. Results

3.1. Developing standard operating procedure (SOP) and checklist

In the first shelter for cleaning the school dormitory, the preliminary on-site job analysis indicated the need of a standard operating procedure for completing the cleaning tasks. The cleaning quality was maintained by the job coaches' constant monitoring and instruction to the disabled workers. Without SOPs for reference, it was difficult to provide consistent guidance for the operation among the job coaches. This difficulty became compounded when an experienced job coach had to leave the cleaning job site either temporarily or permanently. Thus, SOPs should be developed as training materials for job coaches (U.S. Environmental Protection Agency (EPA), 2007) as well as a reference for maintaining service quality for the cleaning jobs (Hattemer-Apostel, 2001; Nakagawa, 2005).

In order to develop SOPs for the cleaning routine, Hierarchical Task Analysis (HTA) (Diaper and Stanton, 2003) was applied to denote cleaning task performance as hierarchies of goals (main tasks) and sub goals (subtasks). Through on-site observations, the cleaning task was decomposed into a series of subtasks that needed to be performed to accomplish the main goal, and each subtask was subdivided as necessary (Dix et al., 1998). The grain level of task decomposition depends on the likelihood of making errors in conducting the task and the consequences of the error (Center for Chemical Process Safety (CCPS), 1994). The tasks included cleaning the restrooms, utility rooms, and bathrooms; sweeping and mopping the hallways; and collecting, transporting and disposing of garbage. The restroom located near the