

Work and assistive technology on perspective of people with physical disabilities*

O trabalho e a tecnologia assistiva na perspectiva de pessoas com deficiência física

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ABSTRACT: The employability of people with disabilities is an important debate nowadays, and the difficulties, facilitators and barriers at work are issues that need to be understood from those who have gone through this process. Aim to identify through the perspective of people with physical disability aspects that facilitate and/or hinder their inclusion in work activities and understand the contribution of assistive technology in the performance of the role of work for these people. There were 30 participants aged between 18 and 60 years with physical disability, who were interviewed by the researchers. The data analysis for the interviews was performed using the content analysis. Results: The work is presented as an important means of personal and professional fulfillment in the lives of respondents, and a way of inclusion in society. Assistive technology appeared as facilitator both on relevant issues in the workplace and in relation to accessibility, such as adapted transport and mobility. Education and prejudice were identified as the main barriers to the inclusion process at work. It highlights the importance of affirmative action and to encourage the debate of public policies for access to rights of people with disabilities, guaranteed by Brazilian law.

KEYWORDS: Disabled persons; Self-help devices; Technology/methods; Occupational therapy/methods; Work.

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RESUMO: Nos dias atuais, a empregabilidade das pessoas com deficiência é um debate crescente e as dificuldades no trabalho precisam ser compreendidas a partir daqueles que vivenciam esse processo. Objetiva-se identificar os aspectos que facilitam e/ou dificultam a inclusão de pessoas com deficiência em atividades laborais e entender a contribuição da tecnologia assistiva no desempenho do papel ocupacional de trabalho. Trata-se de uma pesquisa qualitativa. Participaram 30 sujeitos, com idade entre 18 e 60 anos. Foi desenvolvida entrevista semiestruturada e a análise dos dados foi feita a partir da análise de conteúdo temática. O trabalho apresentou-se como importante meio de realização pessoal e profissional na vida dos entrevistados, além de forma de reconhecimento pela sociedade. A tecnologia assistiva apareceu como um facilitador tanto no ambiente de trabalho quanto em relação à acessibilidade para se chegar a ele. A escolaridade e o preconceito foram pontuados como as principais barreiras ao processo de inclusão. Destaca-se a importância de ações afirmativas e de incentivo ao debate de políticas públicas pelo acesso aos direitos das pessoas com deficiência, garantidos na Lei brasileira.

DESCRIPTORES: Pessoas com deficiência; Tecnologia/métodos; Equipamentos de autoajuda; Terapia ocupacional/métodos; Trabalho.

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INTRODUCTION

The study presents several meanings, depending on historical period and social, political, economic and cultural context it is inserted¹. Besides that, it exercise an elementary role on building identity and defining ways to insert the individual on the world. Daily relationships allow such construction, as individual as social. On adulthood, workspace is constituted as mediator of the construction and development of this identity².

Work bring the fulfillment to the individual, enabling social recognition, promoting self-esteem, and enabling the affirmation of personal identity. It also determines the temporal structure of society functioning³.

Historically, people with some kind of disability have gone through segregation process, marginalization and stigmatization. Movement and struggle for rights of disabled people, searching equality began in 1960's, relating to the work access need. Right to work and other activities related to the individual may be seen as result of social movements that resulted into legislations, conventions, declarations, policies, and actions that contributed to implement social policies, and opportunities and relations to disabled people⁴.

Within this legal apparatus, on the Brazilian context, there is a National Health Policy on Disabled Persons, in accordance with National Program of Human Rights, Quota Law, and currently Convention about Disabled Persons Rights.

The topic of access to labor market for a disabled person has been discussed in researches that highlighted the profile of a disabled person^{6,7}, difficulties and proposes for inclusion barriers^{8,9}, debates from the experience of labor insertion^{9,10} and about the comprehension of how disabled people experienced work¹¹.

Disabled people have presented difficulty and may need help to perform daily activities. Such activities may be related to mobility, learning, and communication, affecting the performance of activities taken at home, school, on leisure or work¹². The actions directed to space infrastructure of public spaces, as accessibility and adapted transportation are examples of answers to need of disabled people to participate social life¹³.

In this direction, assistive technology may contribute and support performance of activities, including work. The term assistive technology is defined as an interdisciplinary field of knowledge that also covers products, resources, methodologies, strategies, practices, and services aiming

at functionality promotion, whether is activities or participation of disabled people, which presented incapacity or mobility reduction¹⁴.

This study seeks to contribute to the reflection about the work theme and disability, having as goals to identify aspects that facilitate and/or hinder the inclusion of disabled people on labor market, and to analyze the contribution of assistive technology on work, from the perspective of physical disabled people.

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METHOD

Descriptive and exploratory study of qualitative nature, a method that concerns the universe of meanings, reasons, aspirations, beliefs, values, and attitudes inherent to acts, relations, and social structures. The qualitative research seeks a particular comprehension from the study's topic, and is not concerned with generalizations, but the deepening and coverage of the studied group¹⁵.

Participants characterization

The research was conducted on the Health School Unit (USE) of the Federal University of São Carlos (UFSCar) and also had subject indications by the Non-Governmental Organization Movimento de Informações Sobre Deficiências [Information Movement about Disabilities] (Ong-Mid). The choice of both was based on viability at the time of the selection of disabled people who met inclusion criteria, as follows: adults aged between 18 and 60 years, physically disabled, employed or not, and having work as an important and wanted role for the future, based on indications of occupational therapists from USE, from appointments and medical records.

The selection was made from a tracking which has used the instrument "Occupational Roles Identification List"¹⁶. In this instrument, the subject chooses ten possible roles, attributing a level of importance for each one, and informing roles regarding the performance on time periods: past, present, and future¹⁵. The instrument was used to recruit only subjects who mentioned will to pursue job insertion, and attributed to the highest importance level for such role. As it is, 30 adults with varied physical disability participated.

Data collection instrument

The instruments used for data collection was semi-structured interview. We chose this kind of method because the interview favors the obtaining of information through individual speech, allowing a spokesperson to represent a group¹⁵.

For this purpose, the researchers elaborated a script. The instrument was divided into identification data (name, age, gender, educational level, job position) and the following questions:

1) Do you think any type of assistance is required for you to perform your work? If yes, which one?; 2) Do you think equipment, adaptations, and technologies may help your work performance?; 3) To enter the labor market, what qualities do you think a person must have?; 4) What is to work for you?; 5) How do you evaluate the labor market for disabled people?

Ethical procedures

As ethical procedures, data collection was made through signing of an Informed Consent Form. The research was approved by the Institutional Ethics Committee of the Federal University of São Carlos (UFSCar), under opinion no. 196.255, CAAE no 12838213.0.0000.5504. After the individuals' acceptance, the Informed Consent Form was presented to users, and signed in two copies, one for the participant, and other for the researcher.

Collection and data analysis

Each interview was personally applied with each individual individually. The collections were carried out on the Health School Unit (USE) and on Ong-Mid, in a reserved environment. The interviews were made by a single researcher with average duration of 45 minutes. All interviews were audio-recorded and fully transcribed.

Data analysis was done from the thematic content technique, comprehending three steps: pre-analysis, exploration of the material, treatment of obtained results, and interpretation. Two researches participated on three steps, performing the procedures jointly¹⁷.

The first step used the following procedures: fluctuating reading, hypothesis, goal and elaboration of indicators to base interpretation. On the second step, data were codified from register units. On the last step, categorization was elaborated, consisting on rating elements according to its own similarities and

differences, with subsequent regrouping, due to common characteristics, contradictions, and antagonism of each report¹⁷.

The analysis resulted into four categories: 1. Social representation of work; 2. Qualities and requirements for labor market insertion; 3. Assistive technology and work, and 4. Labor market with problems for disabled people.

As methodological procedure, the reported speech of subjects was highlighted in italic throughout the text. Each subject was named by the letter "S" followed by the respective number, in accordance with the order the interviews were collected.

RESULTS AND DISCUSSION

Identification data of the 30 subjects (n=30) and its characterization from social-demographic data, as age, gender, diagnosis and educational level, revealed a higher number when compared to number of men (n=19) than women (n=11), with an average age group of 38.2 years-old, varying between 22 and 59 years-old. Table 1 presents data from 30 subjects.

The content thematic analysis categories are presented below, obtained from the individuals' speech.

CATEGORY 1- Social representation of work

The respondents pointed out work as a matter of survival connected to income, independence and goal achievement, besides to be comprehended as a personal and professional accomplishment, and an important social role, which brings the feeling of belonging to, vitality and, worth. Such informations are illustrated by the reports below:

"It is personal accomplishment. In addition to a needed process to make a living as a human being, work represents an important psychological and social role for the individual"(S1);

"It is a pleasure to feel useful, active and happy to have my own money to do whatever I want, without having to depend on someone, and to meet new people and learn to develop my talents day after day, it's great" (S8).

So the respondents used the words "is" and "have", i.e., to work means to have quality of life, a way to be independent, to have money, in addition to be something pleasant and that needs to be earned.

Table 1 - Subjects characterization (n=30)

Participants	Age	Gender	Diagnosis	Educational Level
S1	36	M	Spinal Cord Injury	Elementary School Complete
S2	26	M	Brachial plexus injury	Secondary Education Incomplete
S3	33	M	Cerebral Palsy	College Education Incomplete
S4	50	M	Infantile Paralysis	College Education Complete
S5	45	M	Congenital Deformity	Secondary Education Complete
S6	50	F	Spinal Cord Injury	Secondary Education Incomplete
S7	30	F	CVA	College Education Incomplete
S8	22	F	Congenital Deformity	College Education Incomplete
S9	33	F	Cerebral Palsy	College Education
S10	31	M	Amputation	Secondary Education Complete
S11	24	M	Spinal Cord Injury	College Education Complete
S12	31	F	Spinal Cord Injury	College Education Incomplete
S13	33	F	Spinal Cord Injury	College Education Complete
S14	22	M	Distrofia Muscular	Secondary Education Complete
S15	36	M	Spinal Cord Injury	College Education Complete
S16	51	M	Infantile Paralysis	Post Graduated
S17	51	M	Spinal Cord Injury	College Education Complete
S18	34	F	Síndrome de Stickler	Elementary School Incomplete
S19	41	M	Spinal Cord Injury	Elementary School Complete
S20	49	M	Spinal Cord Injury	Secondary Education Complete
S21	49	M	CVA	College Education Incomplete
S22	53	F	Spinal Cord Injury	College Education Complete
S23	28	F	Spinal Cord Injury	Secondary Education Complete
S24	53	M	Cerebral Palsy	Secondary Education Complete
S25	25	M	Multiple Sclerosis	College Education Complete
S26	58	M	Spinal Cord Injury	Elementary School Incomplete
S27	42	M	Spinal Cord Injury	Secondary Education Complete
S28	42	F	Cerebral Palsy	Secondary Education Complete
S29	34	M	CVA	Secondary Education Complete
S30	33	F	Brachial plexus injury	Secondary Education Incomplete

In this way, the work assumes the central sphere of society as a process to create value, vital element to the achievement of capital productive cycle. The work centrality is a structure part of human socialization process, carrying with a purpose and accomplishment to peoples live. While searching for a meaningful life, the labor activity transforms itself in a humanizing element¹⁸.

As a personal development and learning opportunity, the importance to do something one really likes and feels pleasure to do was referred.

Enjoying work is related to confidence, acknowledgement to professional value of each team member and connections established, generating motivational behaviors. However, the dividing line between

pleasure and suffering on work is tenuous and depends on the connections established between the individual and the work organization².

The interviews have also shown that to be working represents an acknowledgment by society and a way to feel productive.

Work inclusion may bring benefits, granting learning and a world new vision for handicapped people. To work allows these people to be recognized as competent professionals, and to bring a real feeling of inclusion on the community, to improve self-esteem and autonomy on daily activities, constituting, therefore, an integrating and participant part in a productive society⁶.

Working can also allow individuals to view themselves as social transforming agents, enabling the inclusion of a person with disability on society, as it is fundamental to ensure citizenship and the feeling of belonging. For a person with a disability, the efficiency feeling towards work and its production adds also to the construction of a social identity and capability recognition, so they can feel part of society as productive subjects¹⁹.

One of the participants has pointed the importance of the workspace for being able to demonstrate competence, independently of having a disability or not:

"Working and showing 'my competence' made me feel like I wasn't so different" (S3).

Therefore, to feel different happens as consequence of established prejudices in society that define the individual who has a physical disability as a different being, imperfect, odd, and incapable. Besides that, the lack of information about disabilities has become one of the main problems caused by society, for it produces an unawareness about real incapacities and limitations of handicapped people, and also about their potentials and possibilities²⁰.

CATEGORY 2- Qualities and requirements for labor market insertion

According to the respondents, the conquest of a job is related to qualification (studies, courses, and experience on specific positions) as is addressed on the following reports.

"In the first place, she must be qualified for the job, because only then she will be competent, and the market demands competence" (S10).

"People with disabilities must be always getting more qualified, for it is a competitive market" (S5).

"I think quotas have not being of great help because what is lacking is qualification for the disabled. There is no use on having quotas if we do not have qualified people to take the jobs" (S20).

Besides formal and specific qualification, the respondents highlighted the need of a few personal characteristics, such as dedication, character, responsibility, commitment, willingness and teamwork spirit and collaboration with colleagues. Below there are a few illustrative reports.

"Dedication, effort, and easiness to learn, good diction, commitment with the company (S10)"

"Fulfillment of schedule and tasks, dynamism, good communication, objectivity, collaboration spirit, to be kind, nice with everyone around you, character, willingness to always learn [...] (S11)"

"Currently, above all, team spirit and leadership (S1)"

One of the subjects refers to the existence of barriers that are not so easy or quick to be removed, as architectonical ones, and that interfere on the qualification of someone with disabilities:

"[...] physical barriers are determining. I live in a city that is very difficult in what concerns easy access, transportation, etc. This discourages the disabled and he ends up quitting studies to stay home awaiting assistant solutions from the State" (S26).

The existence of barriers, being from architectonic or attitudinal order, or lack of didactical resources and impropriation of teaching methods, hinders the educational process and specific professional prepare of many people with disabilities. Considering this, although there is positions available to be taken by a disabled person, there is still difficulty on admittance of this population, being for lack of professional qualification or social prepare, mainly when the performance of more complex and specific abilities are required.²¹.

CATEGORY 3- Assistive technology and work

Among the 30 interviewed, 28 mentioned that assistive technology is necessary and important to a person

with disabilities in the work place, as illustrated through the sentences below:

"Assistive technology is very important because it allows more comfort and results in more quality on work" (S22).

"Assistive technology is necessary on work because I can't stay sit for too long, nor standing up for too long, so it should be altering all day long, my back and legs hurt too much" (S18).

Besides that, 13 participants pointed out the need to some kind of technical help (assistive technology) to get to work, due to lack of accessibility on public transportation being an important obstacle.

"Well, the market for us is great, but we lack transports to facilitate our locomotion to the work place, for the companies provide a transportation allowance, but we know that buses, trains and subways are precarious in our country" (S23).

"[...] there is so much to be improved to assist the locomotion, both on the way to work and on the company itself" (S19).

Another mentioned aspect was the consequence of the lack of assistive technology on the work place for a person with physical disability:

"I work almost all the time on the computer and Internet, I miss the use of assistive technology on my day-to-day work, for the institution does not worry a lot about it and we end up suffering with pains and inappropriate posture" (S27).

The reports collected in the interviews bring important topics to the discussion. On one hand, there are access and accessibility problems to public transportation. On the other hand, each person with a disability has its own peculiarities, which requires that workstations and positions held by each individual to be carefully analyzed.

When highlighting accessibility, the respondents associated assistive technology to adapted transportation and to aspects related to mobility. Accessibility is understood as an assurance that everyone has access to all conviviality areas, as physical spaces, furniture, urban equipment, systems and means of communication and information¹⁵. As well as transport, services, and facilities opened to the public or for public use, on urban and rural areas²².

From those answers, it is possible to affirm that accessibility is not being guaranteed for all, disabling the full participation on social spaces, especially on work.

On work place, architectural barriers exist inside and outside, such as staircases, paving stone, high shelves, lack of ramps, elevators and toilets. Such barriers hinder the independent access to the companies for people with disabilities, compromising the right to freely come and go to work²¹.

We highlight that accessibility in the work context may be related to adaptations/arrangements on workstations with the assistance of ergonomics or assistive technology, both aspects were mentioned by the participants.

CATEGORY 4- Problems on the labor market for people with disabilities

The respondents reported that there are a few problems on the labor market which hinder insertion. The reports below register such problems.

"[...] there is a lack of professional qualification due to difficulties in the access to school or professionalizing courses [...]" (S2).

"[...] problems of urban accessibility, buses adapted with lifts, accessible transport stations etc.[...]" (S14).

"[...] even inside the company you're working for, because many companies do not have a proper physical structure, for being mandatory to reserve a parking spot, and not being mandatory to have accessibility on the company, so people with a minor disability are chosen [...]" (S4).

"[...] Prejudice, for many do not believe the person is able to perform an accurate job [...]" (S7).

For all participants, inclusion is not only concerning adaptation of public and private spaces, or acquisition of self-help equipment. Inclusion on labor market must consider also one's permanency in such space.

Such noted problems support statements of several physically disabled people when referring to access difficulties, schooling, and the specific capacity, absence or restrict number of adapted transportation in cities. Prejudice is also a factor that compromises the entry of a disable person on the labor market²³.

In this direction, the Quota Law does not solve problems that this population faces to access and keep

a job. Hiring a disabled people only to abide with the law, with no displacement of existing obstacles (from architectural barriers to behavior), continue to perpetrate existing prejudices regarding these people, and among these the belief that they do not have competence for the labor market²¹.

On today's society, efficiency constitutes a primary foundation, in other words, everything is measured by the capacity of producing effects to attend a regulation. This principle, by consequence, annihilates individual singularities and make impossible for those who do not correspond to statutory for presenting peculiar needs to have access to labor market²⁴. Resistance movements to such mode of production should be planned so disabled people could perform in companies and industries, having job positions which value the best of they have to offer, joining other workers, for indeed in an inclusive company all employees work together and have equal opportunities^{19,5}.

CONSIDERATIONS

Analyses of the interviews portrait main difficulties in this process and pointed out the frailty of the Quota Law enforcement. The present barriers on

hiring handicapped people for job Market are beyond inspection, but more on social, educational and assistance obstacles, therefore the importance of affirmative actions and encouraging discuss for access to rights of those people, assured by Law.

A few limitations are recognized regarding this type of study; restraining to interview only subjects with physical disability. It is believed that people with other types of disabilities such as visual and hearing impairment could bring different demands concerning work.

When thinking on the potential of methods to favor work inclusion, it is highlighted the usage of assistive technology and ergonomics, making possible to adapt the environment to people, besides habilitation and rehabilitation of a person with a disability.

There is the need of more dialogues that allow the reflection over mandatory adaptation of environments and work places as well as a core team of interdisciplinary professionals (such as psychologist, production engineer, occupational therapist, architect, social assistant) that may care for matters related to the inclusion of those people. Suggestion for future researches must involve an investigation of well-succeeded cases of work inclusion, and verify what were the method and strategies adopted.

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