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Received: 30-03-2012 / Reviewed: 07-05-2012
Accepted: 24-09-2012 / Published: 01-03-2013

DOI: <http://dx.doi.org/10.3916/C40-2013-03-07>

Disability in the Perception of Technology among University Students

La discapacidad en la percepción de la tecnología entre estudiantes universitarios

ABSTRACT

There is a widespread discourse across academic and scientific literature extolling the benefits of technology as an element of the educational process for people with disabilities that is based on many assumptions and implicit claims related to the «education, disability and technology» triangle. Although these assumptions and claims have a rationale, too often they have been considered valid, and therefore guide educational practice, without having previously undergone any process of scientific research that supports and justifies them. In this context, and in order to analyse one of these theoretical premises, this study aims to establish, firstly, whether the disability is involved in the process of giving meaning to technology and, secondly, to what extent the impact of disability is a differentiating factor in the perception and use of technology as an educational element. After gathering data from questionnaires completed by university students (28 with disabilities and 109 without), the results allowed us to establish two main conclusions. The first one shows that the most valuable dimension of technology as a teaching tool is its use as a tool for curriculum access and participation. As for the second, related to the perception of accessibility issues, it paradoxically revealed that students with disabilities find the use of technology easier than their peers without disabilities.

RESUMEN

Existe un discurso generalizado en la literatura científica sobre las bondades de las tecnologías como elemento del proceso educativo de personas con discapacidad. Dicho discurso está basado en muchas premisas y afirmaciones implícitas vinculadas al triángulo educación, discapacidad y tecnología que, si bien tienen base lógica, se han dado en muchas ocasiones por válidas y orientan la práctica educativa sin haber sido sometidas a ningún proceso de investigación científica que las avale. En este contexto y con el objeto de contrastar una de dichas premisas teóricas, este estudio tiene como objetivo establecer si la discapacidad interviene en el proceso de atribuciones subjetivas de las tecnologías y en qué medida constituye un factor de diferenciación en la percepción y aprovechamiento de las mismas como elemento didáctico. Los resultados del trabajo, a partir de la información recogida en cuestionarios a estudiantes universitarios (28 con discapacidad y 109 sin discapacidad), permiten establecer dos líneas principales de conclusiones. La primera de ellas evidencia que la dimensión más valorada de la tecnología como herramienta didáctica es su uso como instrumento de acceso y participación en el currículum. Y la segunda, relacionada con la percepción de los problemas de accesibilidad, paradójicamente, pone de manifiesto que los estudiantes con discapacidad manifiestan tener menos obstáculos en el uso de las tecnologías que sus compañeros sin discapacidad.

KEYWORDS / PALABRAS CLAVE

Disability, accessibility, technology, university, educational research, students.
Discapacidad, accesibilidad, tecnología, universidad, investigación educativa, estudiantes.

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1. Introduction

The dominant discourse on technology and disability posits that Information and Communication Technologies (ICTs) constitute, in principle, a tremendously valuable tool for encouraging the development, inclusion and participation of collectives traditionally excluded from several areas of social and cultural life.

1.1. Technology as a tool for inclusion in educational discourse

A large part of the educational discourse on technology and disability is founded on the premise that ICTs are tools for improving autonomy and encouraging inclusion processes in the various social and cultural settings (Pavia, 2010; Cabero, Córdoba & Fernández, 2007). In totally virtual scenarios and in types of face-to-face teaching supported by technology, ICTs open up a wide range of possibilities for overcoming the shortfalls in traditional teaching systems and provide «learning environments with greater educational potential» (Marqués, 2001: 94). Technology changes the educational settings and their possibilities, thereby enabling a training process to be offered that responds to students' needs and demands rather than to imperatives mapped out by organizational structures and by teachers at educational centres. In the case of university classrooms, at least, they are closely tied to a University model as a centre of knowledge, the printed word and face-to-face teaching. Contrary to these static models, where teaching is situated at the hub, the introduction of ICTs has allowed the learning process to become more flexible (Collins & Moonen, 2011; Hinojo, Aznar & Cáceres, 2009). Consequently, this change of focus has enabled university studies to encompass groups in society that, for a number of different reasons, cannot access classrooms (Area, 2000).

These principles ratify the accepted theoretical framework defending the notion that technology allows students with disability to participate more actively in the general curriculum as well as to achieve academic success (Mehlinger & Powers, 2002; Rose, Meyer & Hitchcock, 2005). However, for this to be possible, the role of ICTs as a curricular instrument must be twofold: on the one hand, offering a diversity of means in order to guarantee such access and participation in the curriculum and, on the other, the potential of the media, to adapt to the needs of all students (Cabero, 2004).

This role of technology as an inclusive curricular element is based on flexibility, a characteristic inherent to how digital contents are stored and transmitted (Hall, Meyer & Rose, 2012; Rose & Meyer, 2002).

Instead of being inserted into a physical medium of a static nature, digital contents become dynamic and transformable: versatile for their presentation and viewed in multiple formats, with the possibility of «marking» and labelling their various structural components; and they are easy to interconnect by linking one part of the contents to another.

However, the data point to a reality in which the presence of students with disability is significantly lower in educational or employment settings, especially in Higher Education, with only 5.26% of the disabled population completing a university degree (INE, 2008). These figures reflect, among other things, serious shortcomings in the current educational system based on the traditional teaching models, incapable of accommodating and integrating students with special educational needs (Castellana & Sala, 2006; Aguado & al., 2006; Sigh, 2005; Vasek, 2005). Therefore, in such a framework, it must be inferred from the previous discourse that the educational model underlying new technologies is revealed as an opportunity for people with disability to access academic courses leading to a professional qualification, and to participate in a variety of knowledge-based contexts and virtual cultural socialization settings (Alba, Zubilaga & Ruiz, 2003).

1.2. Comparative analysis as a research framework

Another interesting approach taken in the scientific literature, closely related to that of the present paper, involves comparative studies of students with and without disability, mostly with results showing no significant differences between the two groups. Thus, Jelfs & Richardson (2010) conclude that the impact of disability on the perception of the academic quality of their courses, as well as how they approach the process of studying and learning, seems very slight. Some more evident differences are highlighted by Eden and Seiman (2011) in a comparative analysis of technology's contribution via communication processes to social and emotional relationships, offering certain empirical evidence of its usefulness in social and support activities.

Stewart, Coretta & Jaehwa (2010) studied the difference in academic results between students with and without disability depending on whether their training was delivered traditionally or online concluding that, although the general outcomes showed a similar level of performance, the data suggested that students with disability performed better with online courses, given the availability of contents in «multimodal» formats.

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As background to the present study, the data published in Zubillaga and Alba (2011) show that disability does not seem to constitute an element of differentiation in access to and use of technology as a teaching element.

The comparative analysis of students with and without disability revealed that the differences between them were not only insignificant, but also presented very similar patterns in the use of ICTs: these were instrumental and communicative uses, with a dominant presence of basic applications and e-mail for completing their assignments and communication, but with very limited use of technologies related to active and autonomous searching on the Internet. Only technologies of a social nature, such as social media or chats, reflected a significantly higher use among students without disability.

2. Methodology and research design

The present study arose out of the need to verify the degree of certainty of many of the implicit premises and statements related to the education, disability and technology triangle. While the above-mentioned studies on ICTs uses

reflected similar results for both groups, the main question is whether the motivations that encourage their use are the same, or if disability influences users' perception of these resources as a support tool or as a barrier in the educational process. In short, it is pertinent to probe further into technology-related aspects and attitudes in order to offer insights into why the theoretical discourse and practice do not end up converging. To this end, the following goals were set:

- To analyse the differences between students with and without disability in terms of their perception of technology as a supporting element in the learning process.
- To analyse the contributions made by technology to traditional scenarios and resources and to determine the real improvements offered by ICTs in the educational process of individuals with disability.
- In short, to establish whether disability is involved in the process of subjective attributions of technology and to what extent disability constitutes a differentiating factor in the perception and uses of technology as a learning element.

The research, carried out between February and December 2009, used a questionnaire as the basic data-collection tool which consisted mostly of closed questions (only one item allowed for an open-ended response). Likert scales from 0 to 5 were used to reflect the degree of agreement/disagreement on the part of the interviewee with the items proposed. It was structured following a preliminary review of the literature and in line with the goals proposed in the study, focusing on four thematic areas: ICTs as an element supporting the educational process, access to and use of the university's website and the Virtual Campus. It also included the comparison between digital and traditional teaching materials, in view of the extensive

In such a framework, it must be inferred from the previous discourse that the educational model underlying new technologies is revealed as an opportunity for people with disability to access academic courses leading to a professional qualification, and to participate in a variety of knowledge-based contexts and virtual cultural socialization settings.

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coverage given to this specific subject in the scientific literature on disability and technology. The questionnaire was validated by means of the Expert Opinion technique using a panel of 10 professionals from academia and the field of disability, who assessed each of the items by applying criteria of relevance and clarity, as well as proposing specific suggestions that were incorporated into the tool. The data collection procedure, through face-to-face interviews, allowed supplementary qualitative information to be obtained and also made it easier for students to complete the questionnaire when, due to their disability, they were unable to manage its format easily.

With respect to the study population, according to the Complutense University of Madrid's official figures for the academic year in which the survey was held, out of the total of 86,159 students, 360 had registered at the Office for the Integration of People with Disability. A non-representative random incidental sample of 28 students with disability and 109 without disability was extracted. Data collected were analysed using SPSS 17.0 software.

3. Results

3.1. Sample description

With respect to the description of the sample of students with disability, there was a marked tendency to study degree courses in Social Sciences and Law (42.9%), followed by Humanities (21.4%), Health Sciences (17.9%) and Technical Sciences (10.7%). The fewest number of students studied Experimental Sciences (7.1%). As for the students without disability, 57.8% studied Social Sciences and Law, followed by 25.5% who opted for Technical studies, 13.8% for Experimental Sciences and 0.9% Humanities. Almost three quarters of the sample with disability (71.4%) were in their third or a higher year. Only 7.1% had recently arrived at the university. We highlight the fact that 10.7% of the sample was engaged in postgraduate studies (Doctorate). Unlike this group, the vast majority of students in the group without disability (63.3%) were in their first year (42.2%) or second year (21.1%). Fourth-year students represented 18.3%, and 8.3% were each in their third and fifth year, while the percentage of students taking doctorate courses was also lower (0.9%). In terms of gender split, both groups had a majority of women (a little over 67%).

The breakdown by age throws up some significant findings. A total of 59.3% of the students with disability

surveyed were over 23 years of age, while almost half the non-disability group was between 18 and 20 (49.5%), and another 33.9% between 21 and 23. Students with disability were above-average age compared to the general university population. There is a remarkable trend in this group, which seems to need longer than the normal time established to complete their degrees, which is confirmed by the fact that 25% of the sample was even older than 30 years of age, unlike any of the students without disability surveyed.

As for the type of disability, reduced mobility accounted for half of the sample (50%), followed by hearing impairment (21.4%) and visual impairment (17.9%). The degree of disability was ranked as quite high, with 65% of disability confirmed by 44.4% of the students, and none was below the threshold of 51%.

3.2. Research findings

The first of the aspects to be studied was their beliefs about the role played by technology in the educational process, stressing certain statements directly related to its role in the learning process of students with disability. Data reveal a dual perception of technology among students with disability in the sample. For these students, technology opens up a multitude of opportunities in their personal learning process, signifi-

	Degree						NSC	\bar{x}	s
	0	1	2	3	4	5			
Technology helps me overcome the difficulties I face at university (architectural barriers, mobility problems, following lectures, compatibility with employment).	17.9	10.7	7.1	10.7	21.4	32.1		3.04	1.93
	2.8	12.8	24.8	20.2	26.6	12.8		2.94	1.34
Technology makes it easier for me to adapt timetables and the pace of learning to my needs.	17.9	14.3	14.3	14.3	7.1	32.1		2.75	1.93
	8.3	11.9	23.9	26.6	19.3	10.1		2.67	1.40
Technology helps me overcome social obstacles to the teaching / learning process (difficulties in taking part out of shyness, choosing to make a disability visible or not, etc.).	42.9	10.7		14.3	14.3	17.9		2	2.07
	11.1	10.2	25	22.2	22.2	8.3	0.9	2.63	1.47
Technology helps me access educational materials.	3.6	10.7		3.6	21.4	57.1	3.6	4.25	1.32
			2.8	13.8	39.4	43.1	0.9	4.26	0.81
Educational material in electronic format enables me to choose the presentation format according to my needs (voice, Braille, text, etc.).	17.9	14.3	7.1	3.6	25	21.4	10.7	3.11	2.11
	10.4	8.5	15.1	21.7	22.6	21.7		3.03	1.59
The Virtual Campus tools enable me to communicate more easily with my peers than face to face.	39.3	7.1	14.3	3.6	10.7	10.7	14.3	2.29	2.33
	18.3	22	21.1	18.3	10.1	10.1		2.10	1.56
The Virtual Campus tools enable me to communicate more easily with lecturers than through face-to-face tutorials.	25	10.7	7.1	10.7	17.9	17.9	10.7	2.82	2.17
	11	8.3	18.3	26.6	20.2	15.6		2.83	1.52
Technology gives me the chance to carry out practical activities that would be complex in a face-to-face setting (due to the impossibility of attending, limitations associated with a disability, etc.).	21.4	7.1	14.3	21.4	14.3	17.9	3.6	2.68	1.88
	10.1	11.9	11	24.8	29.4	12.8		2.90	1.52
I believe that technology-supported learning presents fewer barriers for me than traditional classes.	10.7		10.7	25	17.9	35.7		3.46	1.59
	8.3	11.9	12.8	26.6	21.1	19.3		2.98	1.53
The ability to interact with colleagues and students face to face is fundamental for my learning process.	7.1		10.7	14.3	3.6	64.3		4	1.53
	0.9		2.8	11.9	27.5	56.9		4.36	0.98

Table 1. Perception of ICTs as a supporting element in the educational process («Students with disability» / Students without disability).

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cantly improving their access to materials (78.5%) and, in short, offering them a learning experience with fewer barriers than traditional lectures (53.6%).

Ease of access to teaching materials is the belief most strongly supported by students with disability (78.5%) and by the other group of students (82.5% acknowledge this). However, this is surpassed by the need for face-to-face socialization rather than remote electronic relationships: 84.4% of students without and 67.9% of students with disability considered it essential to have real contact with their peers. This idea is also perceived to a significant degree among the group of disabled students, as ratified by the low scores given by this group to statements linked to the social aspects of ICTs: 53.6% do not believe technology helps them overcome social obstacles in their educational process, nor does it facilitate communication with lecturers (in 35.7% of cases) and even less so with colleagues (46.4%).

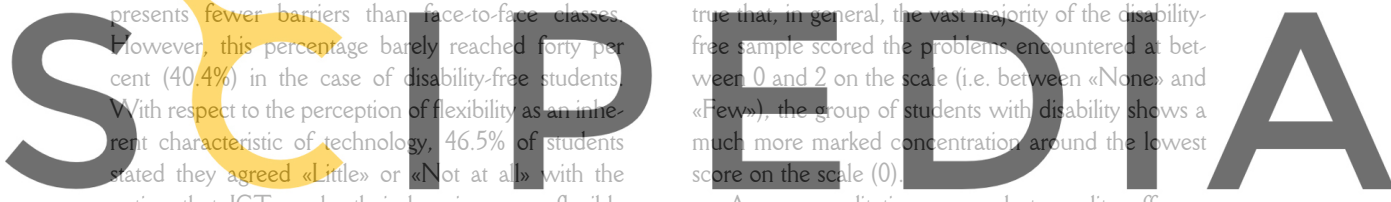
More than half the sample of students with disability, 53.6%, believes that learning supported by ICTs presents fewer barriers than face-to-face classes. However, this percentage barely reached forty per cent (40.4%) in the case of disability-free students. With respect to the perception of flexibility as an inherent characteristic of technology, 46.5% of students stated they agreed «Little» or «Not at all» with the notion that ICTs make their learning more flexible versus 39.2% that did perceive this potential for adaptation. The analysis of the data shown in Table 1 illustrates that, although the values obtained for the average scores (\bar{x}) in each of the questions are very similar for both groups, dispersion is greater in the responses from the group of students with disability, as reflected in the values for standard deviation (S), versus greater

homogeneity in the responses of students without disability.

Tables 2 and 3 present the answers from both groups with respect to the perception of the university's website and the Virtual Campus and problems of access and use. The purpose of collecting this information did not respond to the need to know to what extent they interact with and use these resources, but rather how both samples perceive the problems of accessing and using the two resources. Data show that the barriers are perceived in both groups as practically non-existent, and more than half the sample claim to find «No problem» with all the items proposed.

Nonetheless, and although very low scores were obtained at the highest ends of the scale, students without disability stated they had greater problems accessing and using both these digital resources than their peers with disability. There are very few items classified under the heading «No problem» for at least half the sample: none on the website and six out of the ten items proposed on the Virtual Campus. Although it is true that, in general, the vast majority of the disability-free sample scored the problems encountered at between 0 and 2 on the scale (i.e. between «None» and «Few»), the group of students with disability shows a much more marked concentration around the lowest score on the scale (0).

A more qualitative approach to reality offers a potential explanation. When asked «If you have had problems, how did you resolve them and who did you seek help from?», half of the students with disability interviewed acknowledged that they had had difficulty using the Virtual Campus: 51.7% said they had found problems using the platform, of which 60% stated that they had solved the problem by themselves. When



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	Degree							\bar{x}	s
	0	1	2	3	4	5	NSC		
Website access and download	67.9	21.4	3.6	3.6	3.6			0.54	0.99
	31.2	19.3	19.3	14.7	12.8	2.8		1.67	1.50
Equivalent alternatives to visual contents (images, graphical items, etc.)	64.3	7.1	14.3	7.1	3.6		3.6	0.93	1.53
	29	28	15.9	17.8	7.5	0.9	0.9	1.69	2.46
Equivalent alternatives to auditory contents	67.9	7.1	7.1		3.6	7.1	7.1	1.14	2.31
	30.8	21.5	19.6	15.9	8.4	3.7		1.61	1.46
Links (descriptive text, linkage to description, etc.)	57.1	14.3	7.1	21.4				0.93	1.24
	31.5	26.9	16.7	13	6.5	4.6	0.9	1.54	1.51
Website lay out (font, background, colour scheme, possibility of changing the presentation)	67.9	3.6	7.1	14.3	7.1			0.89	1.42
	41.3	19.3	11	19.3	5.5	3.7		1.39	1.49
Ease of navigation (menu organization, how easy it is to find what they are looking for)	50	10.7	10.7	7.1	14.3	3.6	3.6	1.50	1.87
	25.2	20.6	15.9	15.9	14	8.4		1.98	1.64
Keyboard navigation of the website	57.1	3.6	7.1	7.1	3.6		21.4	1.82	2.48
	30.8	16.8	18.7	15.9	8.4	9.3		1.82	1.65
Website's compatibility with other technologies (different browsers, technical aids)	53.6	21.4	7.1		3.6		14.3	1.36	2.12
	38.7	17	19.8	15.1	4.7	4.7		1.44	1.48

Table 2. Problems relating to University Website Access and Use. («Students with disability» / Students without disability).

faced with the same question, 60.5% of the students without disability stated they had on some occasions run into a problem using the Virtual Campus; they had solved these problems themselves 48.3% of the time, and had received assistance from the teacher another 36.7%.

With respect to the perception of the support and benefits that the Virtual Campus entails for their learning process, both groups identify «access to educational materials» as the most important, according to 60.5% of students without disability and 70.8% of their colleagues with disability. For many students with disability it is a valuable aid to following explanations and 41.7% believe it presents «Some support» in this sense. For students without disability, an even higher percentage, 46.8%, think that the platform offers them between no support and little support in this area.

The speed and availability provided by technology with respect to printed material and the flexibility and ease of transformation, mentioned above for the choice of presentation format, are the two items reflecting the most divergent results between the two groups.

Of the students without disability, 89% ranked first the ease with which they could quickly make use of the materials, versus 92.9% of students with disability, whose top ranking went to the possibility provided by digital material for them to choose a presentation format that adapts to their needs. This latter aspect, on the other hand, is the least valued by their non-disability colleagues (it has the lowest average for all the items). As shown in Table 4, the scores for digital material ver-

sus traditional material are higher on average, than for previous headings, with lower levels of dispersion in the responses, very similar for both groups.

3.3. Discussion of results

In line with most of the comparative studies previously published, the results do not show significant differences between the two groups, but rather certain discrepancies on some specific aspects. With respect to the new possibilities provided by technology in educational settings, particularly as a supporting element for students with special educational needs, some disability-related comments are observed. There is unanimity on specific aspects such as the improvement in access to teaching material and the need for socialization with peers, but the general perception of the improvements that technology brings to the educational process is somewhat higher for students with disability.

The greatest barriers to the educational process are perceived in accessing information. Thus, the Virtual Campus is shown as the most useful tool for students with disability, acting as a support for them to follow classroom explanations.

The analysis of the perception regarding accessibility problems offers interesting results, a little different on some points from the theoretical discourses found in the specialized literature. Although the data reflect that accessibility problems are perceived as practically non-existent in both groups, a greater tendency is seen among students with disability to minimize, or even eliminate, the existence of such problems. The results

	Degree						NSC	\bar{x}	S
	0	1	2	3	4	5			
Website access and download	54.2	16.7	4.2	8.3	16.7			1.17	1.57
	26.6	30.3	22.9	11	6.4	2,8		1.49	1.31
Agenda / calendar management	79.2	8.3	4.2	8.3				0.42	0.92
	49.5	29.4	9.2	8.3	1.8	1,8		0.89	1.17
Chat rooms usage	66.7	12.5	4.2	4.2	4.2		8,3	1	1.86
	58.7	18.3	11	7.3	3.7	0,9		0.82	1.20
e-mail usage	66.7	8.3	12.5	4.2	8.3			0.79	1.31
	67	15.6	5.5	9.2	1.8	0,9		0.66	1.14
Workgroups usage	62.5	12.5	4.2	4.2	8.3		8,3	1.17	1.94
	61.3	14.2	15.1	4.7	2.8	1,9		0.79	1.21
On-line self-assessment and tests	58.3	16.7	4.2		8.3	4,2	8,3	1.29	2.05
	59.4	18.9	11.3	4.7	2.8	2,8		0.81	1.25
Task completion	66.7	12.5	12.5	4.2			4,2	0.75	1.42
	54.2	20.6	13.1	10.3	0.9	0,9		0.86	1.14
Accessing learning materials (presentations, texts, bibliography, lecture notes, outlines, graphical items, etc.)	58.3	8.3	8.3	16.7	8.3			1.08	1.47
	38	28.7	18.5	9.3	4.6	0,9		1.17	1.21
Accessing online resources	66.7	8.3	8.3	12.5			4,2	0.88	1.54
	42.6	24.1	15.7	12	3.7	0,9	0,9	1.17	1.32
Accessing marks	66.7	12.5	8.3	4.2	4.2		4,2	0.83	1.55
	63.9	19.4	9.3	3.7	3.7			0.64	1.04

Table 3. Problems relating to Virtual Campus Access and Use. («Students with disability» / Students without disability).

regarding teaching materials are certainly those most closely reflecting the theoretical discourse, and both speed and flexibility are very highly regarded by both groups.

4. Conclusions

The conclusions drawn from the data in connection with the goals proposed reveal interesting aspects in personal perceptions, and offer some keys with regard to determining whether disability is involved in the process of subjective attributions to technologies.

As indicated in the discussion of the results, there are no significant differences between the two groups in their perception of ICTs as support elements, with access to digital educational materials (whether for their speed and availability or for their flexibility of presentation) as the most highly-valued aspect.

With respect to technology's contribution as a learning tool for responding to diversity and the real improvements brought to the students' educational process, the role most esteemed by students is that of technology as a tool for accessing and participating in the curriculum, particularly for those elements focusing on the digitalization of resources and subjects. In short, to provide digital access to the classic «lecture notes», books, manuals and the texts and slides of presentations. This enables them to be used speedily and flexibly, with each student choosing the presentation format that best suits their needs. The solutions and possibilities offered by technology as a means of access to contents and expressing what they have learnt are much more highly valued and in demand than the new participative and communicative settings.

It is precisely this communicative aspect that is perceived with some misgivings by the students, who fear that virtual communication might replace face-to-face interaction in their contact with lecturers and fellow students. The social dimension associated with academic life is very prominent among all students: the University is not only a means to acquire better training or

a way to access employment, but a place in which to make personal relations, communicate with colleagues, lecturers, in short a context of social integration.

Finally, there are clear signs of a certain influence of disability in the process of subjective attribution of ICTs but, paradoxically, in the opposite sense than might be expected according to theoretical discourses. The perception students with disability have of the problems in using technological services is lower than that of their disability-free peers. By and large, disabled students reaching university have confronted, on a daily and regular basis, numerous obstacles throughout their educational history, so they may end up perceiving these as inherent elements in the performance of their academic activities. They are used to confronting barriers by themselves, generating strategies that enable them to overcome or bypass such obstacles. And it is this self-learned ability to troubleshoot their problems that further emphasizes their perception that such problems do not exist, because for them they constitute an element as mundane as their solution. Students without disability, however, who have not needed to develop this ability to adapt constantly, have a lower tolerance of difficulties, so their perception of the problems is triggered at lower levels.

This introduces several elements for discussion with regard to educational inclusion: to what extent does this capacity for self-learning and personal autonomy render invisible the barriers that exist in university contexts? What is the role and degree of responsibility of the different members and levels of the university community in denouncing such barriers? These questions are impelling, even more strongly if that were possible, the precise and objective identification of the visible and invisible barriers interfering with the academic and social life of students with disability at university, as well as the work undertaken in various spheres and among all members of the university community to ensure the development of a truly and effectively inclusive university.

	Degree						NSC	\bar{x}	s
	0	1	2	3	4	5			
It lets me access materials I could not have accessed in the traditional way	7.1		10.7	3.6	14.3	64.3		4.11	1.52
	2.8	2.8	3.7	25.7	22	43.1		3.91	1.23
	3.6			17.9	25	50	3.6	4.25	1.17
I can choose the presentation format that best suits my needs	2.8	5.5	8.3	21.1	30.3	32.1		3.67	1.30
		3.6	3.6	7.1	25	57.1	3.6	4.39	1.06
I can use the material more quickly than with traditional printed material	0.9	10.1	10.1	31.2	47.7		4.15	1.06	
	7.1		3.6	14.3	32.1	39.3	3.6	3.96	1.42
The formats used are normally compatible with the hardware and software I use (technical aids, browsers, operating systems, etc.)	0.9	1.9	6.5	16.7	46.3	27.8		3.89	1
	3.6		7.1	7.1	25	57.1		4.25	1.11
It lets me be more independent because I don't need other people to obtain / adapt the material	0.9	3.7	13	14.8	33.3	34.3		3.79	1.20

Table 4. Comparison of digital versus traditional teaching materials («Students with disability» / Students without disability).

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