

# DISABILITY AND THE USE OF ICT IN EDUCATION: DO STUDENTS WITH SPECIAL NEEDS RECOGNISE THE SUPPORT GIVEN BY TEACHERS WHEN USING TECHNOLOGY

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## Abstract

*The Information and Communication Technologies are a decisive element to normalize the conditions of the students' life with special needs, and in some cases, one of the options for the access to a school curriculum. However, in the context academic, the development of the new technologies has favored the appearance in new ways of social exclusion.*

*In presented study it was analysed the availability of the necessary resources to these students, checks the usage of the available technology and examines up to what point the students recognise the support of the teachers using information and communication technologies - ICT, to help them succeed in their studies.*

*Thirty-seven students with special needs participated in this study, coming from a secondary school in Alicante and from the University of Alicante. Was prepared a questionnaire to investigate the use, experience and recognition of the support given by the teachers using ICT with these students.*

*The results indicated that these students felt ready to use the technology resources in their studies. However, they did not receive support by the teachers and they noticed differences in approach, depending on the stage of the educational course and the type of disability.*

*There still exist important obstacles in obtaining a total integration for disabled students; in particular making the role of the teacher a vital issue to provide an educational answer to such diversity.*

**Key words:** *students with disabilities, teaching and learning, ICT use, teacher preparation, formative stages.*

## Introduction

Technological advances over the last few years have helped the integration and adaptation of people with special needs in all fields of work. These technologies allow people with this problem to contribute at the labour market thereby developing a more independent life for themselves (Alcantud, Avila & Asensi, 2000; Martin-Labora 2005).

One of the main areas where the use of ICT is important is in the field of education. In this context, the application of ICT is very important as it plays an essential role in supporting high quality education for learners with disabilities. The advantages of ICT usage in the teaching and learning process are based on the possibilities it offers for alternative means of communication, providing access to educational resources in a more convenient way and to enhancing learning motivation. By overcoming obstacles of time and space, supplementing vital human functioning and supporting the development of crucial skills, these technologies contribute to the increased effectiveness of educational processes by enabling people with disabilities to actively participate in teaching-learning process.

In this sense, as Sanchez Montoya (2002) pointed this out when he states that ICT are instrumental in the realization of the following aspects:

- Firstly, use specifically designed computers and computer learning programs and content items like personal practical programs for each subject (multimedia, tutorials, stimulation and demonstration programs). By using such tools and devices each student with special needs will be able to learn how to use the technology.
- Secondly, the software programs, which are adapted for the disabled student enabling them to use the material according to their abilities.
- Thirdly, the didactical use of web connection, as a tool for learning and study, gave the disabled student digital competence. This allowed them to get information and develop the ability to understand any subject or disciplinary matter (Tondeur, Braak & Valcke, 2007).

However, the use of ICT as an efficient method is completely useless in the educational field if its adaptation and use creates another form of social exclusion for students with special needs. This is because of lack of resources resulting in the inability of these students to follow the same activities as their fellow students without special educational needs (Ertmer, 2005; Kozma, 2003; Mitchell, 2005; Skidmore, 2004; Zhao & Frank (2003).

Because of this problem, Sigalés, Mominó, Menesses & Badia (2008), compiled an analysis from 17.986 primary and secondary educational schools. The results showed a marked limitation in the availability and access to ICT resources. In particular, in the majority of schools, computers with Internet access were located in specific classrooms outside of the normal area usages. Only 13.4% of these schools had a minimum of 10 computers available in the normal classrooms used by the students. These restrictions in the educational structure strongly affect the use of ICT as a communicative tool.

The main people affected negatively by this lack of access to computer resources are the students themselves. Only one in five students had access to an email address to communicate with their teachers and fellow class students. If this limits normal students in the use of ICT resources, one can image how greater the limitations are for those students with special needs and in need of help to reduce the difficulties they encounter in the educational field (Blackstone, 2008; Klenowski, 2005). As Adell (2003) pointed out, ICT is particularly strident in education and the fact that it is almost non-existent in the classroom is a very grave situation considering that the school is the place where one talks more about new technology and where we see less of it.

#### *Research Question*

It is proven that ICT is an added value for the education of the majority of students in regular school with or without special needs, efforts being made, to equip all schools and students with computers and Internet connections, but the important of ITC, which are for students with special educational needs on their use, it is not known if they have these tools in the classroom.

What resources our students with special needs use? Do the schools have adequate technological resources? Do they know how to use them? Can disabled students really get access to these resources in order to carry out identical types of activity using the computer in the same way as the other students? If the answers to these questions are negative we are, without doubt, talking about exclusion. However, this type of exclusion in relation to disabled students is not limited to just a lack of accessibility but other factors can also contribute to this, for example the lack of human support in the use of ICT. This lack of support is a major obstacle (Echeita, 2006).

In order to arrive at a successful adaptation of individual activities, computerized didactic

material or the use of ICT for all students and especially for students with special needs, it is vital to have the help of the teacher, (Montero & Gewerc, 2010; Rose, 2007; Thomas, 2008) who is a fundamental part in the use of these technologies, both for information and communication of these students (Soto y Rodríguez, 2004; Suriá, 2011; Zuber-Sherritt, 2007).

From these observations and studies for to avoid exclusion and create inclusion for these students with special needs, it is necessary to give educational training to the teachers who are responsible for students with special needs. These teachers may not know how to adapt the material or they may feel insufficiently prepared or unwilling to deal with students with special needs (Galanouli, Murphy & Gardner, 2004; Konur, 2006).

What perception do students with this problem have of the support given by the teachers in the way they teach and the understanding of the material given? Is the adaptation of the ICT used as an instrumental aid? Are there differences of opinion between the students with special needs themselves? If this is the case, what influence can these variables have on these opinions? Can the type of disability influence this study? Do the age of the students and the stage of his/her educational course also influence the study?

To answer this, the primary purpose of this study to highlight whether the student with special needs has the necessary resources available. Also checked if they are using these resources and looked at how much these students felt supported by the teachers to help them be successful in their studies.

## Methodology of Research

For this research a descriptive exploratory study was carried out through a questionnaire survey on the use of ICT in students with special educational needs of various stages of formation.

### *Sample of Research*

In the study are included 37 students coming from the University of Alicante (n=19) and from secondary education schools (n=18) also from Alicante. Of these, 45.9% were female and 54.1% were male (Table 1). These students were classified into two groups, according to their stage of educational study. This was done intentionally through the formal consent of the participants. Although there were more students with Need, only these 37 students responded. All of them were previously known.

**Table 1. Demographic data.**

Type of limitation			Age		
	N	%		N	%
Physics	10	27	< 15	4	10.8
Psychic	13	35.1	16- 20	9	24.3
Visual	9	24.3	21- 25	6	16.2
Hearing	5	13.5	> 25	18	48.6
Total	37	100	Total	37	100.0
Sex			Do you use ICT to further your studies?		
Woman	17	45.9	Yes	37	100.0
Male	20	54.1	Need some technological adaptation?		
Total	37	100.0	Yes	37	100.0

### *Instrument and Procedures*

The data collection instrument was designed ad hoc to meet the objectives of the study. The questionnaire was divided into 3 blocks. The first to examine the social demographic aspect of the students; the second to explore the use, availability and attitudes of the students with disability towards ICT; and finally the third to understand the perception these students have with regards the predisposition and support of the teachers. The questions used were closed with yes/no answers and Likert format with 5 alternative answers (1 = none, 2 = little, 3 = somewhat, 4 = enough, and 5 = very much).

The study consisted of a questionnaire presented to a group of students. This was intentionally done between April 2010 and October 2010. A formal consent was obtained from the participants. The initial contact was made directly through an interview with these students. Once the procedure was explained we organised a meeting with them to fill out the questionnaire along with a social demographic profile. The time needed to carry out the study was approximately 30 minutes per person and the application of the study was explained to those interviewed.

### *Design*

The investigation is based on a quasi-experimental basis as had control of the type of participants. Also, the study was not done at random as the students belonged to a specific context and were grouped according to the type of educational course.

### *Data Analysis*

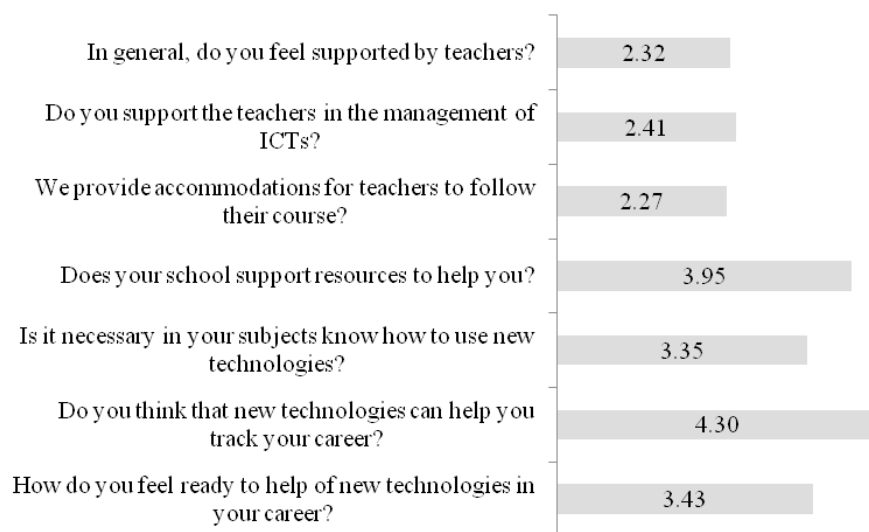
In relation to the descriptive data of the variables used in the study, were obtained frequencies, percentages and descriptions of the study in each of the variables (mean and typical deviations). Descriptive analysis was performed on these frequencies and valid percentages. At the same time we also carried out different multivariate analysis of co-variance (MANCOVA) according to the independent variables of the educational course (secondary school or University) matching this to the type of special needs (physical, psychological, visual or auditory) with the gender used as a co-variant to control its effect.

After, was used ANCOVA's multivariates in the significant results. The level of statistical significance of acceptance or rejection of the hypothesis of the study was  $p > 0.001$  and  $p > 0.05$ .

### **Results of Research**

The results of the social demographic profile of the participants can be seen in Table 1 where we describe the data in relation to the age, sex and type of disability.

In the results was noted, in general, that the media mark given to the technology encountered went from 3) something and 4) enough, while 2) little, referred to the support received by the teachers (Figure 1).



**Figure 1: Measures for Perceptions of ICT and teacher support.**

The results from MANCOVA were significant (Lambda de Wilks  $_{7, 22}$ ,  $F = 15.86$ ,  $p < 0.001$ ) in relation to the differences in the range of questions regarding the educational course. The same thing occurred regarding the type of disability (Lambda de Wilks  $_{21, 63}$ ,  $F=1.85$ ,  $p < 0.05$ ). However, the gender interaction between the type of disability and the educational course was significant.

The result was also significant in the education cycle when analyzing the dimensions we found in the different significant statistics. What is essential is the capability of using new technology [ $t(35) = -10.27$ ,  $p < 0.001$ ], and to this purpose was signaled out those students with a higher average in their studies. With regards the questions relating to the support given by teachers, we found that the University students from this study were unhappy with this support in comparison to those from secondary education. For this reason there is a significant result in answer to the question: “Do teachers help you to understand and adapt your disabilities in order to follow your studies?” [ $T(35) = 8.452$ ,  $p < 0.05$ ], and to the question: “Does your teacher help you to use the ICTs?” [ $t(35) = 2.003$ ,  $p < 0.05$ ], and finally, to the general question of: “Do you feel you have the support of the teachers?” [ $t(35) = 2.032$ ,  $p < 0.05$ ].

**Table 2. Perceptions of ICT and support teacher training by stage.**

Perceptions of ICT and support of teacher	Formative stage	M	SD	t
How do you feel ready to help of new technologies in your career?	Institute	3.54	0.52	0.852
	University	3.38	0.58	
Do you think that new technologies can help you track your career?	Institute	4.15	0.80	-0.971
	University	4.38	0.58	
importance of using ICT in the studies	Institute	1.92	0.49	-10.277**
	University	4.13	0.68	
Do teachers help you to understand and adapt your disabilities in order to follow your studies?	Institute	3.15	1.77	8.452*
	University	1.79	1.1	
Does your teacher help you to use the ICTs?	Institute	3.00	1.78	2.003*
	University	2.08	1.02	
Do you feel you have the support of the teachers?	Institute	2.92	1.7	2.032*
	University	2.00	1.06	

(\*\*)= significance level of 0.001, (\*) = 0.05 significance level.

Results are also significant in the scores obtained by students according to type of problem (Table 3):

**Table 3. Perceptions of ICT and support of teachers according to type of problem.**

Perceptions of ICT and support of teacher	Type of problem										
	Physical		Psychic		Visual		Hearing		Total		F
	M	SD	M	SD	M	SD	M	SD	M	SD	
How do you feel ready to help of new technologies in your career?	3.40	0.70	3.38	0.51	3.56	0.53	3.40	0.55	3.43	0.55	0.184
Do you think that new technologies can help you track your career?	4.10	0.88	4.31	0.63	4.33	0.50	4.60	0.55	4.30	0.66	0.637
Importance of using ICT in the studies	3.30	1.25	3.62	1.19	3.00	1.32	3.40	1.34	3.35	1.23	0.432
Does your school support resources to help you?	3.90	0.74	3.85	0.38	4.00	0.50	4.20	0.45	3.95	0.52	0.585
Do teachers help you to understand and adapt your disabilities in order to follow your studies?	1.60a	1.26	1.85b	1.52	3.22ab	1.20	3.00	1.58	2.27	1.50	3.05*
Does your teacher help you to use the ICT?	1.80 ac	1.03	1.69 bd	1.32	3.44 ab	1.01	3.60 cd	0.89	2.41	1.38	7.14*
Do you feel you have the support of the teachers?	1.70 ac	1.06	1.62 bd	1.33	3.44 ab	1.01	3.40 cd	0.55	2.32	1.38	7.45*

(aa, bb ...) pairs of equal letters indicate statistically significant differences between their means; (\*\*) < 0.001 significance level, (\*) < 0.05 significance level.

The results indicate significant differences in the significant levels from the question referring to “Do teachers help you to understand and adapt your disabilities in order to follow your studies?” when comparing physical (M = 1.6, SD = 1.26) and psychological (M = 1.85, SD = 1.52) disabilities with that of visual disability visual (M = 3.22, SD = 1.20), [F (3, 36) = 3.05, p < 0.05].

In the same way, in answer to the question “Does your teacher help you to use the ICT?” found statistically significant differences when comparing those students with physical (M = 1.8, SD = 1.03) and psychological (M = 1.69, SD = 1.31) disabilities to those with visual (M = 3.244, SD = 1.01) and auditory (M = 3.44, SD = 1.01), [F (3, 36) = 7.14, p < 0.05] disabilities.

Finally, the latter analysis in answer to the question “Do you feel you have the support of the teachers?” Those students with physical (M=1.70, D.T=1.06) and psychological (M=1.62,



SD = 1.33) problems had statistically significant differences in comparison to those with visual (M = 3.44, SD = 1.01) and auditory (M = 3.40, SD = 0.55), [ $F(3, 36) = 7.45, p < 0.05$ ] problems.

## Discussion

The existence of disabled students in superior level education is an increasing phenomenon (Eches & Ochoa, 2005; Konur, 2006; Suriá, 2011). This has been observed over the last two decades where the educational integration of such students at pre university level, is on the increase. But the transition stage from secondary education to University has proved to be difficult for this type of student. This is because they have been looked after and given more support in the schools and institutes over the years but when they arrive at University level, where these students start a different stage in their education, this support is not available. Considering that these students must confront a new phase in their education level, which requires more independence, and are without the necessary support given to them previously.

Such things as ambient conditions, motivation, self-conception and self-esteem influence the end result, success or failure, in their educational studies. There is also the complexity of the particular age group of these students.

One example of this is reflected in the results of this study, in which the different level of teacher support detected by disabled students in secondary education in comparison to that in the University, where many students were unhappy with the support.

This is reflected in the use of ICT. Results indicate that students study the technologies used to pursue their studies. They have no problem using this technology and are fully aware of its importance in their academic world. However, there remains the problem of the lack of support on the part of the teacher to handle, use and adapt this technology, notwithstanding the availability of such modifications in the various educational centers.

Depending on the type of disability we noticed, in general, little support on the part of the teaching staff. This lack of suitability relates not only to the physical structures or architecturally, but also in regards to normative regulation, strict curriculum and the organization of the teaching profession (Susinos & Rojas, 2004), which can be one of the major obstacles to the integration of these students (Somekh, 2008).

As Larrivee (1982) pointed out, even though the law can impose integration, the way in which the teacher responds to the need of his/her students can be variable.

This is a much more compelling aspect of success in the integration than any administrative or curriculum strategy. For this reason the support of the teaching profession is of vital importance to arrive at a positive educational response to diversity. This is not to take away the other very important aspects mentioned previously such as the organization and the use of technological resources (Nachmias, Mioduser & Forkosh-Baruch, 2008).

Apart from the perception of support to the type of disability displayed by the student, were also observed differences in those students with visual disability who obviously received more teacher support. This is understandable, as a visually disabled student requires more adjustment and support in order to follow the class work and the teacher will be more aware of the student's disability. This situation follows the same pattern for the rest of the studies both in the classroom and at home. However, when dealing with physical disability students, for example someone in a wheelchair, we normally worry about the physical surroundings such as stairs and access to the classroom. We tend to forget the necessity of these particular disabled students when they need to take notes or use a normal keyboard.

In the same way, these students with psychic disabilities are one of the groups that suffer the most from their disability becoming invisible. In some cases, the teacher is not aware of the limitations of these students. In other cases, the sense of stigma and embarrassment that these

students feel in speaking about their mental problems to the teacher, mean a lack of support in the technological resources needed to follow their studies with success.

These results are consistent with other studies showing a tendency to support pupils with very obvious and yet other needs remain invisible (Dengra, Durán & Verdugo, 1991).

## Conclusions

The importance of this investigation in the educational world is clear, as it is obvious that there exist strong obstacles in obtaining total integration for disabled students in educational centers.

The necessity for secondary education schools along with universities to have at their disposal a special service that facilitates the study work and daily relationships of students with the different areas of the educational domain, prior to the incorporation of these disabled students to Universities. This service would act as a support to the student with special needs when dealing with the University teachers, personnel and administrative staff.

It would also help with services within the ambient of the University; public administration and associations or entities that support disabled people, their fellow students and family members. The University also needs to set up training courses for the teaching staff on how to support and confront the limitations and needs of these disabled students.

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*Advised by Laima Railienė, University of Siauliai, Lithuania*

Received: *September 17, 2011*

Accepted: *October 15, 2011*

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