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**TOWARDS AN ACCESSIBLE SCIENCE: FACILITATING
ACCESS TO SCIENTIFIC
DIGITAL RESOURCES FOR VISUALLY IMPAIRED
STUDENTS**

**D2.3 Support services for visually
impaired in scientific university
courses**

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EXECUTIVE SUMMARY

This document is part of the work package 2 about the state of the art. It illustrates the state of the art about how blind and visually impaired students are supported in scientific university courses in Europe. At first, the need for specific support services is remarked. Then the results of a survey about the actual situation in Europe are presented.

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1 INTRODUCTION

1.1 Overview

At present, most of European countries have regulations to guarantee equal access to education. In particular, national acts are focused on students with disability who attend courses from primary school to university. As for university, up to recent years, only few countries had specific regulations to facilitate support to students with special needs in university courses. Therefore, at present, some of the services which aim to support students with special needs in university are in an early stage and they need to gain experience from long term success support actions and to develop specific activities for the national context in order to set really effective and efficient services able to react properly in very different situations. In particular, as far as blind and visually impaired students, problems concerning technical and scientific courses are more and more being taken into account by universities. That leads to several solutions. Some of them are dependent on the national context, others

could be shared at international level. Basing on the existing solutions, the @science network will select and further extend the best ones so as to come to transnational guidelines. This document will analyze how, at the moment, the problem of visually impaired students in scientific courses is tackled by European university support services for students with special needs.

1.2 Methodology

In order to collect state-of-the-art information about how university support services all over Europe provide special services for blind and visually impaired students in technical and scientific university courses, the following activities were undertaken:

- search of web sites presenting university support services activities on the web. The main activities were analyzed with respect to blind or visually impaired students in university courses. Support services, remarkable for their expertise with blind and visually impaired students were selected to be contacted;
- review of literature about special needs and assistive technology in order to find information on support experiences and to select those university support services specialized for blind and visually impaired students. In particular, the proceedings of ICCHP conference (International Conference on Computer Helping People) were examined;
- participation to conferences to look for the latest best experiences. In particular, up to now the following events have been attended: ICTA (The first International Conference on Information and Communication Technology & Accessibility, April 12th-14th, 2007, Hammamet - Tunisia), CHE (Conference on "Higher Education and disability", July 23th - 27th, 2007, Innsbruck, Austria), ICC (International Camp on Computers and Communication, Helsinki, Finland, July 23th - 30th, 2007), CVHI (Conference on Visual and Hearing Impairment, August 27th - 31st, 2007, Granada, Spain), AAATE (9th European Conference for the Advancement of Assistive Technology in Europe, October 2nd - 4th, San Sebastian, Spain);
- preparation of a questionnaire to collect information about the support activities for blind and visually impaired students in university technical and scientific courses. The questionnaire was distributed to the @Science members who filled it according to their long term experience or



distributed it to the university support services with special expertise in each country. Questionnaires were distributed also to those support services selected by the web search or by the literature review. Results from questionnaires are presented in section 4 by comparing the situation in each country. All of the questionnaires are reported in appendix 1;

- a list of university support services with special expertise for students with visual impairment in scientific studies was prepared and it is reported in appendix 2.

2 THE NEED FOR SUPPORTING VISUALLY IMPAIRED STUDENTS IN UNIVERSITY SCIENTIFIC COURSES

Higher education institutions all over Europe confess themselves to offering equal opportunities for people with disabilities. Actually there are still differences between study conditions, legal regulations, architectural access to university buildings and especially access to scientific courses as far as some disabilities are concerned. Above all, blind and visually impaired students have to face many barriers in going through university scientific studies. Some of these barriers concern: reading, writing and processing mathematical expressions, exploring and creating technical drawings as well as using specific programs necessary in a certain educational context, in particular symbolic and numerical computation software and programming environments. There exist assistive tools which help blind and visually impaired overcome successfully many of these problems. They were examined in deliverable 2.1. Even if these tools are available, students in the early years of a university course may not know the existence of proper tools or they may not know how to use these tools. So, it is essential a service which informs about the existence of proper tools to go through university scientific courses. Also, specific training might be indispensable. Further problems involve the reading process. Actually, available scientific resources, even in digital format, are generally not usable by visually impaired and blind university students. Therefore, adaptation in alternative formats is indispensable and it usually takes long time and high expertise to come to a high quality result. Main problems concerning access to scientific reading resources and state-of-the-art solutions were examined in deliverable 2.2. The adaptation process from not usable formats (e.g. printed material or not accessible digital formats) to usable formats has to be planned and carried on in time so as to enable the students to attend the course and learn a certain subject according to the lessons being held. So, a well co-ordinated service should exist in the university. Such a service should either adapt scientific educational resources or co-ordinate external institutions which adapt the necessary learning material on time. Nonetheless, additional issues have to be overcome successfully by visually impaired and blind students who attend scientific university courses. In particular, attending lessons and taking examinations are very challenging activities, which often prevent students from successfully accomplishing university courses. Explanations of technical and scientific subjects are usually based on transparencies with text, mathematical expressions and technical drawings. Professors are used to write on transparencies or on the blackboard (e.g. to illustrate the solution of exercises or to clarify concepts). The verbal explanation does not always describe what is printed on the transparency or what is added by writing on it. Therefore, the blind or visually impaired student often only gets the gist of the explanation, but many details are lost and have to be approached after the lesson. Because of difficulties to understand what is presented at lesson time, the learning process after the lesson can't be based on notes taken during the explanation. Therefore, collaboration with students who attended the lesson or the possibility to have notes available in usable formats are crucial to learn the subjects presented in the course. As for taking examinations, two main problems can be outlined: the need to have the text of the examination in a format usable by the blind or visually impaired student and time expensive working procedures with assistive tools. Text, mathematical expressions and drawings in each written exercise have to be adapted in advance so as to enable the student to read and understand them during the examination. It means that a special service at university should take care of this adaptation procedure, which is a sensitive one. Indeed, the exercises in examinations have not to be known in advance by the students. Therefore,



the adaptation service has to guarantee full reliability. The second issue concerns time expensive use of assistive tools and activities which are time demanding because of a non-visual modality (e.g. exploration of tactile drawings). Certain assistive tools, especially those for the preparation or exploration of tactile images, compensate for the lack of sight, but the users can perform operations in a longer time than sighted ones. That leads to the need of a longer duration of the examination so as to enable the student to solve all of the exercises. Longer duration of written examinations as well as further special needs should be discussed and agreed in advance with the professor. All of these considerations evidently remark the need for well-structured and properly coordinated specialized support services in universities in order to enable blind and visually impaired students to go through technical and scientific courses at university.

3 THE QUESTIONNAIRE FOR UNIVERSITY SUPPORT SERVICES

3.1 Overview

In order to collect state-of-the-art information about how university services for students with disability in Europe undertake support action, especially with respect to blind and visually impaired students in scientific courses, a questionnaire was prepared by the @science consortium. The questionnaire is made up of three parts. The first one concerns national regulations for supporting students with special needs at university. The second part aims at collecting information about how many students with visual impairment undertake scientific university courses and which support services are available in universities. The third part is focused on collaboration between universities and institutions for persons with disability as well as with publishers as far as adaptation of learning resources is concerned. As for countries where a member of the @science network was present, the questionnaire was filled in by the @science member itself. As for countries not covered by the @science network, this questionnaire was distributed to universities all over Europe, selected from literature review, from web search and at the conferences. A list of the institutions contacted follows.

Czech Republic

The questionnaire was filled in by the three main support services in the country:

- TEIRÉSIÁS, Support Centre for Students with Special Needs, Masaryk University, Brno, <http://www.teiresias.muni.cz/>;
- TEREZA (Support center for blind students), Praha, <http://www.tereza.fjfi.cvut.cz/>;
- Support Centre for Students with Special Needs, Palacky University, Olomouc, <http://www.upol.cz/skupiny/studenti/poradenstvi/centrum-pomoci-handicapovanyh/>

Germany

The questionnaire is being filled by the Studienzentrum für Sehgeschädigte - Veröffentlichungen in Karlsruhe university, <http://www.szs.uni-karlsruhe.de/432.php> . At present it has not been given back. It will be provided as an integration to this document.

Hungary

The questionnaire was filled in by the KFKI. The Laboratory of Speech Technology for Rehabilitation (LSTR) is part of the Computer Networking Center which belongs to KFKI. KFKI has expertise in the last 23 years in development of assistive technology based on speech technology. KFKI has been working jointly with the Hungarian Association for the Blind since 1983.

Ireland

It was filled in by the University College in Cork, which collaborated with Dublin City University.

Portugal

The questionnaire is being filled by ACAPO, Portugal Association for the blind, which was contacted as the most relevant authority in Portugal for education of blind and visually impaired. At present it has not been given back. It will be provided as an integration to this document.



Scotland

The questionnaire is being filled by Glasgow university. This university organizes CVHI international Conference on Visual and Hearing Impairment and it has long time experience in supporting students with special needs at university. At present the questionnaire has not been given back. It will be provided as an integration to this document.

Spain

The questionnaire was filled in by the Unit for Education of ONCE, Organizacion National de Ciegos Espanoles. At first, some Spanish universities were contacted (e.g. Madrid university, which presented papers at CVHI conference in 2007, Granada university university of Oviedo which presented papers at ICCHP in 2004 and 2006, University of the Basque Country, Donostia, which collaborated to AAATE 2007 conference). The university representatives asked @science members to refer to ONCE.

3.2 Overview

This section reports the questionnaire as it was prepared by the @science network members. Questions 9 and 10 were part of this questionnaire, but they were necessary for deliverable 2.4. It was distributed in national languages according to the choice of the contacted institutions.

QUESTIONNAIRE

1. How many blind and partially sighted students attend university scientific courses in your country? _____

How many of them are totally blind? _____

How many of them are partially sighted? _____

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)? _____

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)



5. Who is offering these services? (e.g., university support services, libraries, external organizations)

6. Do university support services adapt scientific documentation for blind and visually impaired?

- Yes
- No

If yes, please describe the process of adaptation and preparation in details.

If no, please explain why not.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

- Yes
- No

If yes, how do they cooperate?



If no, please explain why not.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

- Yes
- No

If yes, which ones?

9. Are there courses available for learning specific assistive technologies in science learning?

- Yes
- No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

4 CONCLUSIONS

4.1 Regulations about university students with special needs

Question 3

Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Austria - Graz

There are only general regulations, that the needs of students with disabilities have to be supported. One regulation says, that exams can be modified regarding needs of disabled students.

Austria – Klagenfurt

- The representative of students with disabilities is assigned to the Institute Integriert Studieren as a central contact point
- Support service centre of students with disabilities
- Work station (including a reading station) for blind and partially sighted students
- Personal assistance at the workplace (also for the study)

Austria – Vienna

Yes, there is a regulation, namely the legislation of Universities 2002. It says that there has to be a person at every university who is responsible for dealing with special needs and who is a representative for the group of students with disabilities. Moreover universities have to provide a computer (PC) workstation for students with disabilities and personal support.

Belgium

Regional (Flemish) Decree on Education VII of 8 July 1996: articles 67 and 68, as amended by the Regional Decree on Education of 14 February 2003: article XI.13

Art. 67

§ 1. Special educational resources can be put at the disposition of pupils, course participants or students with a disability following (subsidised or funded) secondary, adult or higher education.

Art. 68

The effective starting day of the above stipulation is September 1995.

"Special educational resources" refers to assistive aids needed by a student with a disability to complete the educational process in a mainstream school. These resources can be technical equipments (such as a braillescope [note taker for the blind] or a CCTV) or the transformation of handbooks and course materials [into accessible formats].

Czech Republic

In difference to the secondary education, there is no regulation at universities on national level in the Czech Republic (except for general declarations on human rights and equal opportunities). The legislative in the tertiary education is up to the universities, whose projects are largely supported and covered by ministry of education.

Hungary

The Hungarian law requires a co-ordinator for disability in universities. At present special services, such as support services, do not exist in Hungarian universities.

Ireland

Under Equality Legislation in Ireland, Equal Status Act 2000 and Disability Act 2005 Higher Education Institutions must make reasonable accommodation to meet the needs of students with disabilities. This includes making the curriculum accessible. Check www.nda.ie and www.heai.ie.

Italy

The act 17/1999 rules support to students with special needs at university. It was approved on January 28th, in 1999. It extends the 104/1992 act about assistance, social inclusion and rights of people with disability. In particular, Article 1 states that students with disability at university must be supported through special services, specific assistive tools and tutors. Furthermore, whenever necessary, special exam modalities can be agreed with the professors. Finally, each university will have a co-ordinator for disability.

Slovak Republic

There are 2 relevant legal documents:

- Higher Education Act (No. 131/2002 Coll.)
- National Programme of development of living conditions of disabled citizens in all areas of life

The Higher Education Act states about:

- admission adaptations for students with disabilities
- study conditions for students with disabilities
- financial sources for provisions for students with disabilities

In accordance with the HE act:

- The form and manner of entrance examination for student with disability shall be determined upon student's request with regard student's disability.
- The university in law shall create appropriate conditions for study of students with disabilities with regard to their special study needs without decreasing requirements on their study results.
- The University shall create within its budget a special fund for support of students with disabilities. This fund can be used to cover the appropriate study conditions for students with disabilities in respect of their special study needs.

Spain

The basis of the actions to help disabled people is set in the actual legislation, taking in high consideration the inclusion principle of the educational system for people with special needs, shaped in as relevant principles as the Spanish Constitution of 1978, in the “Ley de Integración Social de los Minusválidos (LISMI)”, in the “Ley 51/2003” of 2 December, of the equal opportunities, no discrimination and universal accessibility for disabled people, and in the “Ley

organica 4/2007”, of 12 April, with which the previous statutory law of the universities of 6/2001 has been modified.

4.2 Support services for visually impaired university students

Question 1

How many blind and partially sighted students attend university scientific courses in your country?

	Total of VI students	Blind	Partially sighted
Austria – Graz	Not available	N.A.	N.A.
Austria – Klagenfurt	5	0	5
Austria – Vienna	Not available	N.A.	N.A.
Belgium	15	3	12
Czech Republic – Brno	Not available	N.A.	N.A.
Czech Republic – Praha	22	10	12
Czech Republic – Olomouc	9	2	7
Hungary	20	20	0
Ireland	32	2	30
Italy	50	20	30
Slovak Republic	8	2	6
Spain	353	99	254

Austria – Graz

No answer.

Austria – Klagenfurt

5 visually impaired, all partially sighted.

This figures are only regarding the students at the University of Klagenfurt in Carinthia (one of the 9 federal states in Austria), not for the whole country of Austria.

Austria – Vienna

There are no facts and figures available regarding the amount of students with disabilities at the technical university of Vienna. The reason for that is, that when registering at university there is no investigation or census on the status of disability. It is not even raised if a student is disabled or not.

According to a survey of the ministry of science in Austria are approximately 11-12% of the overall student population is either affected by a kind of disability or chronicle illness.

Belgium

15 visually impaired students, of which 3 blind and 12 partially sighted.

(When compared to the situation in the UK, where approximately 0.15% of students are blind or visually impaired, an estimated 237 Flemish students would be blind or visually impaired. How many of them attend university scientific courses is unknown.)

Czech Republic - Brno

No exact data available, according to the estimation made by Masaryk University, Brno, there are about 200 visually impaired university students in the Czech Republic being somehow dependent on other person's help (0.5-1‰). Half of them are studying at Masaryk University where visually impaired represent 0.3% of the total number of students.

How many of them are totally blind? 40-50%

How many of them are partially sighted? 50-60%

Czech Republic – Olomouc

9 students with visually impairments, 2 of them are blind and study at Palacky University.

Czech Republic – Praha

They do not have exact data available. Nowadays, the TEREZA center supports 22 students with visual impairment, 10 of them are totally blind.

Hungary

There is no official estimation. Basing on an investigation carried on by KFKI, about 20 blind students attend university courses in Hungary.

Ireland

32 visually impaired, 2 blind, 30 partially sighted.

In a survey undertaken by AHEAD (Association for higher Education Access and Disability) in Ireland, in 2006 it was found that there is a very low participation of blind and vision impaired students studying in Higher Education. In a survey of 22 Higher Education Institutions, it was found that out of a total of 2,662 students with disabilities, 133 students had a vision impairment. There is now a national strategy to encourage more students who are blind and vision impaired to follow through their education into University. From our own research here in UCC on this subject we realise that many of the problems originate with the poor resources being given to mainstream vision impaired primary and second level students as integrated education is still a new phenomenon in Ireland. Over the past five years we have focussed primarily on introducing the use of JAWS screen reading software as the way forward with little emphasis on teaching of Braille, hence students are then disadvantaged when learning mathematics or science related areas.

We are urgently wishing to learn from best practice internationally to address this issue in Ireland.

Italy

About 50 blind and visually impaired students; about 20 blind students.

Slovak Republic

Slovak universities do not make special registration of students with disabilities. In general, a university is informed about students with disabilities only when they apply for special support during their study time. There are 8 supported visually impaired students in this academic year, 2 of them are blind, and 6 are partially sighted.

Spain

353 visually impaired students, of which 99 are blind, and 254 low vision students.

Question 2

How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

Austria – Graz

No answer.

Austria – Klagenfurt

7700 (regarding only the federal state of Carinthia).

Austria – Vienna

No answer.

Belgium

About 9.435 university students, and around 10.218 in higher education (Flemish part of Belgium).

Czech Republic

About 300 thousands.

Hungary

Some thousands.

Ireland

Over 250. This number includes students who deaf or hearing impaired, students with mobility disabilities, students with specific learning difficulties such as dyslexia and students with physical and mental illnesses. Many dyslexic students study within the sciences in Ireland as their literary problems pose difficulties for them when studying other more textual disciplines

Italy

No official figure is available. By contacting the main Italian universities, about 50 blind and visually impaired students attend technical and scientific courses. Not less than 100000, but there is not an official figure.

Slovak Republic

Nearly 65,000.

Spain

No data available.

Question 4

Which “special” services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Austria – Graz

Out of the 21 Austrian universities 8 offer services for students with disabilities, which includes visually impaired students in general. 6 universities offer services especially for preparation of literature and study material.

Austria – Klagenfurt

- Counselling by the representative for students with disabilities
- Counselling and assistance for working with the work station for blind and partially sighted persons
- Preparation of study materials and literature also by the representative for students with disabilities

Austria – Vienna

- a reading work station for blind or partially sighted students,
- preparation of study materials
- support for specific activities e.g for searching within databases
- general support for daily study activities - assistance and accompaniment
- support for interaction and communication within administration departments (university administration) and teaching staff (professors, tutors, etc...)
- support for organising the study.

Belgium

All students (not only those in scientific courses) can be provided with adapted (large print, Braille or digital) course material, can have extra curriculum support, can opt for oral examinations [sometimes with extra time credits] and may use their laptop or magnifying equipment during classes.

Czech Republic – Brno

All kind of services are available in theory, the practice being reduced mostly to the counselling. Regular production of accessible study material is the case in no more than 3-5 university support centres.

Czech Republic – Olomouc

- Preparation of study material and literature (digitalizing, Braille-printing, audio-recording of printed books on CDs, diskettes, etc.)
- Training in orientation and mobility
- Guide services
- Tutoring of problem solving and specific study affairs support.

Czech Republic – Praha

Different kind of services in different universities (transformation of study literature, including graphics, mobility training, additional individual lessons, etc.).

Hungary

Special services for blind and visually impaired do not exist in Hungarian universities. According to individual needs, the co-ordinator organizes some services, such as recording lessons.

Ireland

Colleges and universities provide study materials in alternative formate in both electronic text and Braille. Colleges also provide training in assistive technology. Braille skills are, however, poor among many blind and partially sighted in Ireland due to lack of training in mainstream primary schools. This is a problem for students who wish to study mathematics based programs in third level. One to one tutorial support is provided in both high school and third level and this is essential to any students wishing to study any mathematics based program. Special exam arrangements are also available with 10 extra minutes provided for every hour. Mathematics and science exams receive no special treatment where exam time is concerned. Assistive technology and software is provided to students through their college. Support can also be provided for transport. Mobility skills are provided in training for both the long cane and guide dog.

Italy

Most university support services in Italy make available the following services:

- special tutors who meet the student with disability after lessons particularly hard to be attended;
- arrangements with professors as for lessons and exams;
- assistive tools for individual use or work stations suitable for many students. Work stations are often useful in laboratories or libraries;
- adaptation of learning material in alternative formats. That is usually achieved through the collaboration of students.

Slovak Republic

In 2000 a national network of disability co-ordinators was build. Each university/ faculty should have a contact person responsible for student with disabilities provisions. Disability co-ordinators work in majority of faculties and offer help, support and advice to applicants, students and academic staff.

At Comenius University there is a Support Centre for Visually Impaired Students, that offers guidance and counselling for applicants, students and academic staff. The Centre provides blind students with study literature in accessible form - transformation of printed texts into an accessible digital form, transformation of grafical parts (description or tactile form/ rarely).

At the Technical University of Košice is Access Center (AC), a special educational workplace, which supports blind and visually impaired students at university in all kinds of courses. Access Center at TUKE prepares literature and study materials for blind and visually impaired students, also staff of AC counsel to students before entering the university study and also during study at university.

The Slovak Library for the blind offers very limited sources for scientific students - preferably in audio and Braille format.

Spain

The services offered by universities to students with visual impairments are the same for all the specialisations. Normally, universities have a department for students with special needs where they support them both in orientation and mobility issues, and in getting the study material in digital formats. These departments are in touch with ONCE to address more specific requests.

Furthermore, the student can count on a support teacher from ONCE, to whom he/she tells all his/her accessibility issues during the study.

Question 5

Who is offering these services? (e.g., university support services, libraries, external organizations)

Austria – Graz

Partly libraries, partly service units for disabled students.

Austria – Klagenfurt

Work station for blind and partially sighted persons in the library of the university.

Austria – Vienna

Institute Integriert Studieren of the technical university in Vienna and the library of the technical university in Vienna.

Belgium

University support services are the main point of contact for a student with a handicap. They are intermediaries with specialised external organisations such as production houses for adapted material, libraries etc. At Leuven University several libraries (including the specialised technical and technological one) have installed equipment to access books or electronic information (in collaboration with IBM)

Czech Republic

Typically, university support centres. In some cases external organizations (Czech Blind United etc.)

Hungary

No answer.

Ireland

Most of these services are provided by Disability Services working in the Universities and colleges. Mobility training in both long cane and guide dog is provided by Irish Guide Dogs for the Blind and long cane training is provided also by the National Council for the Blind of Ireland. Training in daily living skills is also provided, which enables a student to live independently.

Italy

These services are provided by university support services, which sometimes rely on collaboration with external institutions.

Slovak Republic

Specialized services for blind scientific students have been provided explicitly by the 2 mentioned centres.

Spain

In Spain, the support services for university visually impaired students are given through the Department for students with special needs and from ONCE.

Question 6

Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

If no, please explain why not.

	Yes	No
Austria – Graz	X	
Austria – Klagenfurt	X	
Austria – Vienna	X	
Belgium	X	
Czech Republic – Brno	X	
Czech Republic – Praha	X	
Czech Republic – Olomouc	X	
Hungary		X
Ireland	X	
Italy	X	
Slovak republic	X	
Spain	X	X

Austria – Graz

Yes, concerning only Karl-Franzens-University Graz: If the material is available as files it is transferred to an accessible form, if it is only available as print it is scanned. For mathematical forms we use latex. Corrections concerning usability, accessibility, Latex, description of pictures etc. are made by students on higher level.

Austria – Klagenfurt

Yes, the students are reporting the necessity and demand of books and literature at the work station for blind and partially sighted persons in the library of the university. The books and study materials will be scanned and prepared according to the needs by collaborators, tutors or personal assistants.

Austria – Vienna

Yes, scanning, recognition of texts, proof reading, saving data on data medium and provide this data, Braille print, large print.

Belgium

This happens on a individual basis. The student support services can provide magnifications, or they are referring to external services: Flemish Department of Education, the VAPH (Flemish Agency for Disabled Persons), specialised libraries or organisations.

Czech Republic – Brno

Methodological guidelines and directions have been published by Masaryk University (Brno, Teiresias Centre), and are accepted by Czech Technical University (Prague, Tereza Centre). They define pro and cons of tactile, electronic, talking and hybrid material, and describe procedures to be applied in specific cases to spreadsheets and tables, charts and pictures, as well as the treatment of scientific symbols, different writing systems, rules on navigation marks, etc.

Czech Republic – Olomouc

The student can come with his/her study material to the Centre, where it is scanned, corrected and transformed to the required format (Braille-printed text, CD, DVD, ...) by the Centre's qualified workers (or the Centre's student volunteers).

Czech Republic – Praha

In TEREZA centre they prepare texts in digital formats; they also can print it into Braille. Transformation of scientific texts is more challenging. National standard rules for Braille is respected (conversion from TeX, manual overwriting eventually).

Hungary

No, there is no devoted services so the expertise to do it in university often is not available.

Ireland

Irish universities have limited experience in this area, but along with providing materials in Braille, they also provide other tactile materials via the tiger embosser. Because few blind and partially sighted students study mathematics based programs at third level, their needs are usually addressed as they arise.

Italy

Yes, as for scientific courses, there are many differences about the format to be used for visually impaired and blind students. The most used are: tactile images produced through embossers, LaTeX to present text and mathematical expressions, LaTeX-like notation to describe mathematical expressions and speech recording.

Slovak Republic

Yes, the Support Centre in Bratislava is preparing plain text documents, which students read with Braille display or with synthetic speech. The mathematical formulas are represented with ASCII mathematical script (AMS), developed at University in Karlsruhe (Germany).

At the beginning of adaptation scanner + OCR is used (if original book printed is available) or electronic documents. The adaptation of formulas is manual, we rewrite them. If the source file is in LaTeX, a small software tool for replacing defined expressions have been used - the adaptation is partially automatic and partially manual.

At the Acces Center (AC) in Kosice, the staff prepares relief scientific pictures by ZY FUSE Heater, transform the black print scientific books and materials to electronic form with scanner and OCR software Abby FineReader, print some of materials on Braille embosser in Braille code. Teachers create different kinds of specific models, wooden, plastic, paper. For some scientific courses we have metal models. Some materials are produced in LaTeX.

Spain

If with adaptation we mean giving material in a digital format to visually impaired students, then we can answer yes.

We World also answer no because all the material that requires to be transcribed in Braille or embossed is realized by ONCE.

4.3 Collaboration between universities and institutions to support special needs

Question 7

Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

- Yes
- No

If yes, how do they cooperate?

If no, please explain why not.

	Yes	No
Austria – Graz	/	/
Austria – Klagenfurt		X
Austria – Vienna	X	
Belgium	X	
Czech Republic – Brno	X	
Czech Republic – Olomouc	X	
Czech Republic – Praha		X
Hungary		X
Ireland	X	
Italy	X	
Slovak Republic	X	
Spain	/	/

Austria – Graz

No answer.

Austria – Klagenfurt

No:

- The waiting period is much too extensive
- The students need the study materials often very soon
- Lack of resources for cooperation on this level

Austria – Vienna

Yes, offer staff for support services.

Belgium

This happens on an individual basis. The support services will check the needs of the student in question and organise the provision of the appropriate materials. They will also contact publishers to retrieve digital course material if available and will discuss copyright issues with them.

Czech Republic – Brno

In the case of Masaryk University (Brno, Teiresias Centre) which is the major provider of such services, the point to be stressed is that the Centre is running its own public library (as one of the 10 public libraries at Masaryk University) which belongs to major libraries for the blind in the country. The Centre library communicates with the source providers (authors, publishing houses, other libraries) in the same way as any other library or publishing house in the country, with the difference that providing disabled persons with special copies is simplified due to the Czech copyright act. Several other universities (Charles University, Czech Technical University in Prague) have their small libraries for the blind based, to a certain extent, on similar co-operation.

Czech Republic – Olomouc

Yes, we share some of our electronic or audio-recorded books.

Czech Republic – Praha

Not in Tereza.

Hungary

No. Accessible books are available from publisher in digital format. The Hungarian copyright law is very liberal for visually impaired people. Anyway, scientific books are not always totally accessible. LaTeX source files, when available, are distributed by publishers to visually impaired students.

Ireland

In Ireland we have a TEXT ACCESS Initiative whereby all higher education Institutions upload all their materials converted into electronic and Braille formats. These materials can then be shared nationally by any blind or vision impaired student studying in any of the colleges.

See www.textaccess.ie

Italy

Universities support services for persons with disability try to collaborate with publishers in order to have the right to adapt some learning resources and with specific transcription services (e.g. those provided by Biblioteca Italiana per Ciechi).

Slovak Republic

Yes, when student comes with the request to adapt the material, the publisher have been asked for a electronic format (to save time and money for scanning printed book). As a second step, we try to contact the author.

Spain

We do not have any information. It is ONCE who work with editors.

ONCE works with editors, so that the materials be produced in an accessible form, so that there is no need to adapt it later.

Question 8

Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

If yes, which ones?

Austria – Graz

Yes. Only for Karl-Franzens-University Graz: Depends on the material which is available, usually problems can be solved.

Austria – Klagenfurt

Yes, lack of resources, e.g. problem of timing, less networking with other preparation services.

Austria - Vienna

Yes, problems with the preparation of mathematical expressions and formulas.

Belgium

- a) Retrieving and collecting course material is very time consuming and the adaptation to an accessible format is expensive.
- b) Graphs, symbols, etc. are very difficult to adapt and often will be replaced by a textual description. Making correct descriptions requires understanding the course material which is often not the case
- c) Administration for financing the adaptations can be slow. Production centres are paid by the Ministry with enormous delays.
- d) Websites and electronic platforms aren't always accessible. At K.U.Leuven the OOP project is collaborating with the informatics service (Ludit), in charge of setting up the educational portal "Toledo" (which in turn is based on Blackboard software), to make at least this student service accessible for all.
- e) Copyright can be an issue.

Czech Republic – Brno

Yes, small quantity of material immediately accessible, time and money consuming procedure of producing new material, reduced usability in most cases, no generally accepted standards in formatting, etc.

Czech Republic – Olomouc

Yes:

- Sometimes it takes too much of teacher's working time and needs a lot of extra-work and a good practical capability of IT technology use.
- Software (the permanent need of modern versions of special SW and sufficient financial support to cover their purchasing).

Czech Republic – Praha

Yes, as a problem appears adaptation of non-literary texts (scientific texts).

Hungary

Yes, there are problems with mathematical notation and figures, but they are often described verbally to visually impaired students.

Ireland

Because few blind and partially sighted students study mathematics based programs, Irish universities generally have limited experience in this area.

Italy

Yes, the main problems concern the duration of the adaptation process. Adapting scientific documentation is a time consuming process so, visually impaired students often have not the necessary learning material on time.

Slovak Republic

Yes.

- Document formats: which format of storing (adapted) scientific materials is perspective to use in the future? We would like to move from plain text to structured document, note to lose the document structure. The ideal format should be automatically converted to AMS and Slovak Braille code.
- Braille representation: The Slovak mathematic Braille code is 6-dot code. It covers the mathematic expressions at secondary school level. When entering university, students need to learn completely new representation of mathematics (AMS).
- Communication with teachers and colleagues: The AMS representation of mathematics is hardly readable for sighted teachers and colleagues. They prefer 2-dimensional representation. This need of written communication with mathematical formulas is really important for practical courses.

Spain

The major problem is that the material for the disabled student arrives to late for the time it takes to adapt it. Sometimes, some formats may be more complicated to be used.

5 CONCLUSIONS ABOUT SUPPORT ACTIVITIES

In the end, some considerations can be remarked about university support services all over Europe. First of all, almost all countries where the questionnaire was distributed have specific regulations for supporting students with special needs in university. Only Czech Republic has no specific act, but the ministry of education largely supports projects aiming to facilitate students with disability in university. Specific regulations were approved rather recently (10 to 20 years). There are not official figures about the number of visually impaired and blind students studying in technical and scientific university courses. Anyway, according to estimations which can have been done by investigating in the main universities, a low number of visually impaired and blind students attend scientific university courses (a few dozen per country). It is remarkable that far more visually impaired students than blind students undertake technical or scientific courses. As for special services all of the support services contacted reported: adaptation of reading resources, facilitating interaction and communication with professors or administrative offices, tutoring for specific courses, availability of workstations or assistive tools and training in orientation. Adaptation of scientific material was regarded as a challenging activity by all of the universities. Especially, it was regarded as a time consuming and very expensive process. Also lack of standards was remarked. Of particular interest for the @science network is the publication of methodological guidelines and directions by Masaryk University (Brno, Teiresias Centre), which are accepted by Czech Technical University (Prague). LaTeX and LaTeX-oriented notations (e.g. AMS notation) are used by all of the universities to adapt scientific resources. Also audio files are employed. As for collaboration between universities and external institutions in preparing learning material, national peculiarities can be pointed out. In Austria, only Vienna university collaborates with external services for adapting material. Other universities consider that a too long process. In Belgium that happens on individual basis. In Czech Republic, Masaryk university provides the best service at national level. In Hungary learning material is not adapted at university. In Ireland exists a national initiative to share learning material in electronic format (TEXT initiative). In Italy there is collaboration with some transcription services. In Slovak no specific collaboration exists with national association for visually impaired and blind, at least as for adapting reading resources. In Spain ONCE is the unique collaborator as for adapting learning material. All of the universities try to come to agreements with publishers so as to have the right to adapt copyrighted resources.



6 APPENDIX 1: QUESTIONNAIRE SUPPORT SERVICES

6.1 AUSTRIA - GRAZ

1. How many blind and partially sighted students attend university scientific courses in your country?

Remark: *As a department of one university, we have no information about the whole country in some topics, therefore we will only answer those questions, that we have information about.*

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

There are only general regulations, that the needs of students with disabilities have to be supported. One regulation says, that exams can be modified regarding needs of disabled students.

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Out of the 21 Austrian universities 8 offer services for students with disabilities, which includes visually impaired students in general. 6 universities offer services especially for preparation of literature and study material.

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Partly libraries, partly service units for disabled students.

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

Concerning only Karl-Franzens-University Graz: If the material is available as files it is transferred to an accessible form, if it is only available as print it is scanned. For mathematical forms we use latex. Corrections concerning usability, accessibility, Latex, description of pictures etc. are made by students on higher level.

If no, please explain why not.

-
7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

- Yes
 No

If yes, how do they cooperate?

If no, please explain why not.

-
8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

- Yes
 No

If yes, which ones?

Only for Karl-Franzens-University Graz: Depends on the material which is available, usually problems can be solved.

9. Are there courses available for learning specific assistive technologies in science learning?

- Yes
 No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

-
10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

- Yes
 No

If yes, please describe the contents of the courses and your experiences with the courses.

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

6.2 AUSTRIA – KLAGENFURT

1. How many blind and partially sighted students attend university scientific courses in your country? 5

How many of them are totally blind? 0

How many of them are partially sighted? 5

This figures are only regarding the students at the University of Klagenfurt in Carinthia (one of the 9 federal states in Austria), not for the whole country of Austria.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

7700 (regarding only the federal state of Carinthia)

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Yes:

- *The representative of students with disabilities is assigned to the Institute Integriert Studieren as a central contact point*
- *Support service centre of students with disabilities*
- *Work station (including a reading station) for blind and partially sighted students*
- *Personal assistance at the workplace (also for the study)*

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

- *Counselling by the representative for students with disabilities*
- *Counselling and assistance for working with the work station for blind and partially sighted persons*
- *Preparation of study materials and literature also by the representative for students with disabilities*

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Work station for blind and partially sighted persons in the library of the university

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

The students are reporting the necessity and demand of books and literature at the work station for blind and partially sighted persons in the library of the university. The books and study materials will be scanned and prepared according to the needs by collaborators, tutors or personal assistants.

If no, please explain why not.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

If no, please explain why not.

- *The waiting period is much too extensive*
- *The students need the study materials often very soon*
- *Lack of resources for cooperation on this level*

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

Lack of resources, e.g. problem of timing, less networking with other preparation services

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

Yes, because for example cooperative learning would be promoted.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes

No

If yes, please describe the contents of the courses and your experiences with the courses.

Yes, because of this the sensibility about the issue will be raised and the understanding will be promoted and study conditions for blind and partially sighted students would be improved.

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

6.3 AUSTRIA – VIENNA

1. How many blind and partially sighted students attend university scientific courses in your country?

There are no facts and figures available regarding the amount of students with disabilities at the technical university of Vienna. The reason for that is, that when registering at university there is no investigation or census on the status of disability. It is not even raised if a student is disabled or not.

According to a survey of the ministry of science in Austria are approximately 11-12% of the overall student population is either affected by a kind of disability or chronic illness.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?
3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Yes, there is a regulation, namely the legislation of Universities 2002. It says that there has to be a person at every university who is responsible for dealing with special needs and who is a representative for the group of students with disabilities. Moreover universities have to provide a computer (PC) workstation for students with disabilities and personal support.

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

- *a reading work station for blind or partially sighted students,*
- *preparation of study materials*
- *support for specific activities e.g for searching within databases*
- *general support for daily study activities - assistance and accompaniment*
- *support for interaction and communication within administration departments (university administration) and teaching staff (professors, tutors, etc...)*
- *support for organising the study.*

-
5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Institute "integriert studieren" of the technical university in Vienna and the library of the technical university in Vienna

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

Scanning, recognition of texts, proof reading, saving data on data medium and provide this data, Braille print, large print.

If no, please explain why not.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

Offer staff for support services.

If no, please explain why not.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

Problems with the preparation of mathematical expressions and formulas.

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

Yes, that would be useful, because the transfer of knowledge concerning the preparation of study materials and literature would contribute to the quality assurance.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

- Yes
 No

If yes, please describe the contents of the courses and your experiences with the courses.

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

We are of the opinion that there should exist several dedicated support services in order to ensure the quality of the preparation of study materials/literature and to make it possible to keep and maintain the quality standard of preparation.

6.4 BELGIUM

Remark: The information given below is applicable to the Flemish part of Belgium only as we did not receive input from Wallonian partners.

1. How many blind and partially sighted students attend university scientific courses in your country? *15 (as reported by contributing institutions)*

How many of them are totally blind? *3*

How many of them are partially sighted? *12*

(When compared to the situation in the UK, where approximately 0.15% of students are blind or visually impaired, an estimated 237 Flemish students would be blind or visually impaired. How many of them attend university scientific courses is unknown.)

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

+9.435 university students and +- 10.218 in higher education (Flemish part of Belgium)

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Regional (Flemish) Decree on Education VII of 8 July 1996 : articles 67 and 68, as amended by the Regional Decree on Education of 14 February 2003 : article XI.13

Art. 67

§ 1. *Special educational resources can be put at the disposition of pupils, course participants or students with a disability following (subsidised or funded) secondary, adult or higher education.*

Art. 68

The effective starting day of the above stipulation is September 1995.

"Special educational resources" refers to assistive aids needed by a student with a disability to complete the educational process in a mainstream school. These resources can be technical equipments (such as a braillescope [note taker for the blind] or a CCTV) or the transformation of handbooks and course materials [into accessible formats].

(Decreet betreffende het onderwijs VII van 8 juli 1996 : artikels 67 en 68, zoals gewijzigd door het Decreet betreffende het onderwijs XIV van 14 februari 2003 : artikel XI.13

Art. 67.

§ 1. *Aan leerlingen, cursisten of studenten met een handicap die gewoon gefinancierd of gesubsidieerd secundair, volwassenenonderwijs hoger of academisch onderwijs volgen kunnen speciale onderwijsleermiddelen ter beschikking worden gesteld.*

Art. 68.

De bepalingen van titel IX hebben uitwerking met ingang van 1 september 1995.

Met "speciale onderwijsleermiddelen" worden hulpmiddelen bedoeld die het kind met een handicap nodig heeft om het onderwijsleerproces in de gewone school te kunnen volgen. Het kan gaan om technische apparatuur (zoals een braillescope, een leesloep) of om omzettingen van leerboeken en studiemateriaal.)

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

All students (not only those in scientific courses) can be provided with adapted (large print, Braille or digital) course material, can have extra curriculum support, can opt for oral examinations [sometimes with extra time credits] and may use their laptop or magnifying equipment during classes.

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

University support services are the main point of contact for a student with a handicap. They are intermediaries with specialised external organisations such as production houses for adapted material, libraries etc. At Leuven University several libraries (including the specialised technical and technological one) have installed equipment to access books or electronic information (in collaboration with IBM)

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

This happens on an individual basis. The student support services can provide magnifications, or they are referring to external services: Flemish Department of Education, the VAPH (Flemish Agency for Disabled Persons), specialised libraries or organisations.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

This happens on an individual basis. The support services will check the needs of the student in question and organise the provision of the appropriate materials. They will also contact publishers to retrieve digital course material if available and will discuss copyright issues with them.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

- a) *Retrieving and collecting course material is very time consuming and the adaptation to an accessible format is expensive.*
- b) *Graphs, symbols, etc. are very difficult to adapt and often will be replaced by a textual description. Making correct descriptions requires understanding the course material which is often not the case*
- c) *Administration for financing the adaptations can be slow. Production centres are paid by the Ministry with enormous delays.*
- d) *Websites and electronic platforms aren't always accessible. At K.U.Leuven the OOP project is collaborating with the informatics service (Ludit), in charge of setting up the educational portal "Toledo" (which in turn is based on Blackboard software), to make at least this student service accessible for all.*
- e) *Copyright can be an issue.*

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

Due to the increasing number of applications of students with a (cognitive) disability (like dyslexia) there might be a need for this kind of courses for students and lecturers in the future. At K.U.Leuven, some information on computer and web accessibility is included into the curriculum for webmasters and architects. This topic will also show up in Leuven's planned Postgraduate course on "diversity management".

The inclusion of this type of information in the general curriculum will definitely result in a better familiarity for all alumni with the problems of handicapped students.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes

No

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

Yes, it would speed up the process of adaptation if university staff could account for accessibility already during the development of course material. At the moment students with disabilities don't have access to all information sources at hand for able-bodied students.

But due to the extremely small number of students with disabilities in scientific courses, there will be probably almost no change in short term policy.

The OOP project at K.U.Leuven, already mentioned above, will organise in the beginning of 2008 courses for students and staff about how to prepare accessible course materials.

6.5 CZECH REPUBLIC – BRNO, OLOMOUC, PRAHA

In the Czech Republic 3 university support places answered the questions.

1. TEIRÉSIÁS, Support Centre for Students with Special Needs

Masaryk University

Šumavská 15, 602 00 Brno

<http://www.teiresias.muni.cz/>

Information provided by: PhDr. Petr Peňáz, penaz@fi.muni.cz

2. [TEREZA](#) (Support center for blind students)

České vysoké učení technické v Praze, Fakulta jaderná a fyzikálně inženýrská

Trojanova 13, 120 00 Praha 2

<http://www.tereza.fifi.cvut.cz>

Information provided by: RNDr. Wanda Gonzúrová, go@tereza.fifi.cvut.cz

3. Support Centre for Students with Special Needs

Centrum pomoci handicapovaným

Palacky University

Křížkovského 8, 771 47 Olomouc

<http://www.upol.cz/skupiny/studenti/poradenstvi/centrum-pomoci-handicapovany/>

Information provided by: Mgr. Veronika Ruzickova, PhD., veronika.ruzickova@gmail.com

1. How many blind and partially sighted students attend university scientific courses in your country?

Brno

No exact data available, according to the estimation made by Masaryk University, Brno, there are about 200 visually impaired university students in the Czech Republic being somehow dependent on other person's help (0.5-1‰). Half of them are studying at Masaryk University where visually impaired represent 0.3% of the total number of students.

How many of them are totally blind? 40-50%

How many of them are partially sighted? 50-60%

Praha

They do not have exact data available. Nowadays The TEREZA center supports 22 students with visual impairment, 10 of them are totally blind.

Olomouc

9 students with VI, 2 of them blind at Palacky University.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

About 300 thousands.

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

In difference to the secondary education, there is no regulation at universities on national level in the Czech Republic (except for general declarations on human rights and equal opportunities). The legislative in the tertiary education is up to the universities, whose projects are largely supported and covered by ministry of education.

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Brno

All kind of services are available in theory, the practice being reduced mostly to the counselling (which is the case in most countries of the world). Regular production of accessible study material is the case in no more than 3-5 university support centres.

Praha

Different kind of services in different universities (transformation of study literature, including graphics, mobility training, additional individual lessons, ...

Olomouc

- *Preparation of study material and literature (digitalizing, Braille-printing, audio-recording of printed books on CDs, diskettes ...).*
- *Training in Orientation and Mobility.*
- *Guide services.*
- *Tutoring of problem solving and specific study affairs support.*

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Typically, university support centres. In some cases external organizations (Czech Blind United etc.)

6. Do university support services adapt scientific documentation for blind and visually impaired?

Brno

Yes

If yes, please describe the process of adaptation and preparation in details.

It makes no sense to describe such services in general, considering fundamental differences among universities and centres. Methodological guidelines and directions have been published by Masaryk University (Brno, Teiresias Centre) and are accepted by Czech Technical University (Prague, Tereza Centre). They define pro et contra of tactile, electronic, talking and hybrid material, and describe procedures to be applied in specific cases to spreadsheets and tables, charts and pictures, as well as the treatment of scientific symbols, different writing systems, rules on navigation marks etc.

Praha

In TEREZA centre they prepare texts into digital form, they also can print it into Braille. Transformation of scientific texts is more challenging. National standard rules for Braille is respected (conversion from Tex, manual overwriting eventually).

Olomouc

Yes.

The student can come with his/her study material to the Centre, where it is scanned, corrected and transformed to the required format (Braille-printed text, CD, DVD, ...) by the Centres's qualified workers (or the Centre's student volunteers)

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Brno

Yes. In the case of Masaryk University (Brno, Teiresias Centre) which is the major provider of such services, the point to be stressed is that the Centre is running its own public library (as one of the 10 public libraries at Masaryk University) which belongs to major libraries for the blind in the country. The Centre library communicates with the source providers (authors, publishing houses, other libraries) in the same way as any other library or publishing house in the country, with the difference that providing disabled persons with special copies is simplified due to the Czech copyright act. Several other universities (Charles University, Czech Technical University in Prague) have their small libraries for the blind based, to a certain extent, on similar co-operation.

Praha

No in Tereza

Olomouc

Yes. We share some of our electronic or audio-recorded books.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Brno

Yes

The same as in all over the world: small quantity of material immediately accessible, time and money consuming procedure of producing new material, reduced usability in most cases, no generally accepted standards in formatting etc. etc.

Praha

Yes

As a problem appears adaptation of non literary texts (scientific texts).

Olomouc

Yes

- *Sometimes it takes too much of teacher's working time and needs a lot of extra-work and a good practical capability of IT technology use.*

- *SW (the permanent need of modern versions of special SW and sufficient financial support to cover their purchasing).*

9. Are there courses available for learning specific assistive technologies in science learning?
Brno

Yes

Every student with visual disability at Masaryk University is offered a special IT course which covers, in addition to common techniques required from any university student, a specific training in assistive technologies. In particular cases (statistics, auxiliary sciences of history etc.), additional techniques are taught. Similar courses are offered by Technical University Prague (Tereza Centre), Charles University (Carolina Centre), and eventually by external subjects (Czech Blind United, Kafira Association etc.)

Praha

No at our university.

We are sure that such courses would be very useful both in the field of informatics and in pedagogic/ didactics field, as well.

Olomouc

No

In our opinion it would be very useful because of the enhancement of scientific learning skills and consequential improvement of academic studies background in general

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Brno

Yes

At Masaryk University, 30-50 persons are constantly involved in preparing scientific documentation for the visually impaired, which requires a systematically organized training. The experience varies, due to the fact that the work is exhausting and there is a considerable staff turnover in these services. In other university centres providing more than counselling, there is usually one person in charge.

Praha

No

We think, that such courses are not imperative, however awareness raising in this field is very important.

Olomouc

Yes

The Centre organizes regular meetings with university staff. The meetings provide a good opportunity for discussing either common or specific problems concerning university students with special needs studies, the Centre's consultants explain and demonstrate the students with visually impairment needs, highlights for better understanding their everyday life and problematic situations relating to their studies, ... However, the Centre is not able

to offer all types of training courses or specialized meetings for all university staff, concerning every issue.

6.6 HUNGARY

1. How many blind and partially sighted students attend university scientific courses in your country?

How many of them are totally blind?

How many of them are partially sighted?

There is no official estimation. Basing on an investigation carried on by KFKI, about 20 blind students attend university courses in Hungary.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

Some thousands.

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

The Hungarian law requires a co-ordinator for disability in universities. At present special services, such as support services, do not exist in Hungarian universities.

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Special services for blind and visually impaired do not exist in Hungarian universities. According to individual needs, the co-ordinator organizes some services, such as recording lessons.

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

If no, please explain why not.

There is no devoted services so the expertise to do it in university often is not available.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

If no, please explain why not.

Accessible books are available from publisher in digital format. The Hungarian copyright law is very liberal for visually impaired people. Anyway, scientific books are not always totally accessible. LaTeX source files, when available, are distributed by publishers to visually impaired.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

There are problems with mathematical notation and figures, but they are often described verbally to visually impaired.

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

Yes it would be useful, especially for students who are in the early stage of the university course.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes

No

If yes, please describe the contents of the courses and your experiences with the courses.

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

Courses would be very useful especially for tutors and professors, who could know how to adapt their working methods also for visually Impaired.

6.7 IRELAND

1. How many blind and partially sighted students attend university scientific courses in your country? 32

How many of them are totally blind? 2

How many of them are partially sighted? 30

Note:

In a survey undertaken by AHEAD (Association for higher Education Access and Disability) in Ireland, in 2006 it was found that there is a very low participation of blind and vision impaired students studying in Higher Education. In a survey of 22 Higher Education Institutions, it was found that out of a total of 2,662 students with disabilities, 133 students had a vision impairment. There is now a national strategy to encourage more students who are blind and vision impaired to follow through their education into University. From our own research here in UCC on this subject we realise that many of the problems originate with the poor resources being given to mainstream vision impaired primary and second level students as integrated education is still a new phenomenon in Ireland. Over the past five years we have focussed primarily on introducing the use of JAWS screen reading software as the way forward with little emphasis on teaching of Braille, hence students are then disadvantaged when learning mathematics or science related areas.

We are urgently wishing to learn from best practice internationally to address this issue in Ireland.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

Over 250. This number includes students who deaf or hearing impaired, students with mobility disabilities, students with specific learning difficulties such as dyslexia and students with physical and mental illnesses. Many dyslexic students study within the sciences in Ireland as their literary problems pose difficulties for them when studying other more textual disciplines

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Under Equality Legislation in Ireland, Equal Status Act 2000 and Disability Act 2005 Higher Education Institutions must make reasonable accommodation to meet the needs of students with disabilities. This includes making the curriculum accessible. Check www.nda.ie and www.heai.ie

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4. Which “special” services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Colleges and universities provide study materials in alternative formats in both electronic text and Braille. Colleges also provide training in assistive technology. Braille skills are, however, poor among many blind and partially sighted in Ireland due to lack of training in mainstream primary schools. This is a problem for students who wish to study mathematics based programs in third level. One to one tutorial support is provided in both high school and third level and this is essential to any students wishing to study any mathematics based program. Special exam arrangements are also available with 10 extra minutes provided for every hour. Mathematics and science exams receive no special treatment where exam time is concerned. Assistive technology and software is provided to students through their college. Support can also be provided for transport. Mobility skills are provided in training for both the long cane and guide dog.

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Most of these services are provided by Disability Services working in the Universities and colleges. Mobility training in both long cane and guide dog is provided by Irish Guide Dogs for the Blind and long cane training is provided also by the National Council for the Blind of Ireland. Training in daily living skills is also provided, which enables a student to live independently.

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

Irish universities have limited experience in this area, but along with providing materials in Braille, also provide other tactile materials via the tiger embosser. Because few blind and partially sighted students study mathematics based programs at third level their needs are usually addressed as they arise.

If no, please explain why not.

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7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

In Ireland we have a TEXT ACCESS Initiative whereby all higher education Institutions upload all their materials converted into electronic and Braille formats. These materials can then be shared nationally by any blind or vision impaired student studying in any of the colleges.

See www.textaccess.ie

If no, please explain why not.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

Because few blind and partially sighted students study mathematics based programs, Irish universities generally have limited experience in this area.

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

Yes. Mathematics and science provide very specific challenges to the blind and partially sighted student and any assistive technologies available should be employed to optimum benefit. Ireland would like to learn from @science project so that more blind and vision impaired students could be equipped with the skills to study within the sciences.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes

No

If yes, please describe the contents of the courses and your experiences with the courses.

In University College Cork the Disability Support Service has an integrated IT AT(Assistive Technology) Lab within the Library complex. Seminars in how to use JAWS or make

lectures accessible are delivered here and blind students are always involved. Currently we only demonstrate JAWS and Tiger Embosser Book Courier, Braille and speak

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

Yes I do. These are the people who understand the materials being worked on by the student and should be the ones who have the skills to help make them accessible. They would of course need the support of the university disability support service. The Computer Science Department in UCC is very interested in developing competencies in these areas as many PhD students are undertaking research in making texts and maths more accessible under the guidance of Dr Ian Pitt, Lecturer in UCC.

Dr Donal Fitzpatrick, a blind computer science lecturer in Dublin City University is also very interested in @science project.

6.8 ITALY

1. How many blind and partially sighted students attend university scientific courses in your country? 50

How many of them are totally blind? 20

How many of them are partially sighted? 30

No official figure is available. By contacting the main Italian universities, about 50 blind and visually impaired students attend technical and scientific courses.

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

Not less than 100000, but there is not an official figure.

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

The act 17/1999 rules support to students with special needs at university. It was approved on January 28th, in 1999. It extends the 104/1992 act about assistance, social inclusion and rights of people with disability. In particular, Article 1 states that students with disability at university must be supported through special services, specific assistive tools and tutors. Furthermore, whenever necessary, special exam modalities can be agreed with the professors. Finally, each university will have a co-ordinator for disability.

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

Most university support services in Italy make available the following services:

-
- *special tutors who meet the student with disability after lessons particularly hard to be attended;*
 - *arrangements with professors as for lessons and exams;*
 - *assistive tools for individual use or work stations suitable for many students. Work stations are often useful in laboratories or libraries;*
 - *adaptation of learning material in alternative formats. That is usually achieved through the collaboration of students.*

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

These services are provided by university support services, which sometimes rely on collaboration with external institutions.

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

No

If yes, please describe the process of adaptation and preparation in details.

As for scientific courses, there are many differences about the format to be used for visually impaired and blind students. The most used are: tactile images produced through embossers, LaTeX to present text and mathematical expressions, LaTeX-like notation to describe mathematical expressions and speech recording.

If no, please explain why not.

7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

No

If yes, how do they cooperate?

Universities support services for persons with disability try to collaborate with publishers in order to have the right to adapt some learning resources and with specific transcription services (e.g. those provided by Biblioteca Italiana per Ciechi).

If no, please explain why not.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

No

If yes, which ones?

The main problems concern the duration of the adaptation process. Adapting scientific documentation is a time consuming process so, visually impaired students often have not the necessary learning material on time.

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

No

If yes, please describe your experiences with these courses.

If no, do you think that offering courses to learn specific assistive technologies would be useful in science learning and why?

There aren't courses specific for technology to learn science. There are courses about assistive tools. These courses are often available in collaboration with institutions for blind and visually impaired.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes

No

If yes, please describe the contents of the courses and your experiences with the courses.

If no, do you think that offering courses for the university staff (professors, tutors, etc.) about how to prepare scientific documentation accessible also for blind and visually impaired would be useful and why?

There are not courses for professors and tutors. They would be helpful in order to have learning resources accessible by visually impaired or to have digital formats which can be easily transformed and adapted.

6.9 SLOVAK REPUBLIC

There are 2 specialized support services at university level in the Slovak Republic - one at Comenius University in Bratislava, one at Technical University in Kosice

1. How many blind and partially sighted students attend university scientific courses in your country?

Slovak universities do not make special registration of students with disabilities. In general, a university is informed about students with disabilities only when they apply for special support during the study time. There are 8 supported VI students in this academic year.

How many of them are totally blind? 2

How many of them are partially sighted? 6

2. How many students are studying at scientific universities in your whole country in general (i.e., regardless of disabilities)?

About 65,000

3. Does your country have a regulation about supporting disabled students' special needs in university education? Could you briefly describe it?

Yes

There are 2 relevant legal documents:

- *Higher Education Act (No. 131/2002 Coll.)*
- *National Programme of development of living conditions of disabled citizens in all areas of life*

The Higher Education Act speaks about

- *admission adaptations for students with disabilities*
- *study conditions for students with disabilities*
- *financial sources for provisions for students with disabilities*

In accordance with the HE act:

- *The form and manner of entrance examination for student with disability shall be determined upon student's request with regard student's disability.*
- *The university in law shall create appropriate conditions for study of students with disabilities with regard to their special study needs without decreasing requirements on their study results.*
- *The University shall create within its budget a special fund for support of students with disabilities. This fund can be used to cover the appropriate study conditions for students with disabilities in respect of their special study needs.*

4. Which "special" services are available in your country to support blind and visually impaired students at university, especially in scientific courses? (e.g., preparation of literature and study material, counselling, etc.)

In 2000 a national network of disability co-ordinators was build. Each university/ faculty should have a contact person responsible for student with disabilities provisions. Disability co-ordinators work in majority of faculties and offer help, support and advice to applicants, students and academic staff.

At Comenius University there is a Support Centre for Visually Impaired Students, that offers guidance and counselling for applicants, students and academic staff. The Centre provides blind students with study literature in accessible form - transformation of printed texts into an accessible digital form, transformation of graphical parts (description or tactile form/ rarely).

At the Technical University of Košice is Access Center (AC), a special educational workplace, which supports blind and visually impaired students at university in all kinds of courses. Access Center at TUKE prepares literature and study materials for blind and visually impaired students, also staff of AC counsel to students before entering the university study and also during study at university.

The Slovak Library for the blind offers very limited sources for scientific students - preferably in audio and Braille format.

5. Who is offering these services? (e.g., university support services, libraries, external organizations)

Specialized services for blind scientific students have been provided explicitly by the 2 mentioned centres.

6. Do university support services adapt scientific documentation for blind and visually impaired?

Yes

If yes, please describe the process of adaptation and preparation in details.

Support Centre in Bratislava: is preparing plain text documents, which students read with Braille display or with synthetic speech. The mathematical formulas are represented with ASCII mathematical script (AMS), developed at University in Karlsruhe (Germany).

At the beginning of adaptation scanner + OCR is used (if original book printed is available) or electronic documents. The adaptation of formulas is manual, we rewrite them. If the source file is in LaTeX, a small software tool for replacing defined expressions have been used - the adaptation is partially automatic and partially manual.

Access Center (AC) in Kosice: Staff prepares relief scientific pictures by ZY FUSE Heater, transform the black print scientific books and materials to electronic form with scanner and OCR software Abby FineReader, print some of materials on Braille embosser in Braille code. Teachers create different kinds of specific models, wooden, plastic, paper. For some scientific courses we have metal models. Some materials are produced in LaTeX.

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7. Are university services working together with libraries or digital content providers during the process of adaptation and preparation of scientific documentation for blind and visually impaired students?

Yes

If yes, how do they cooperate?

When student comes with the request to adapt the material, the publisher have been asked for an electronic format (to save time and money for scanning printed book). As the second step, we try to contact the author.

8. Are there any problems or hindrances coming up during the process of adaptation and preparation of scientific documentation for blind and visually impaired students? (duration, formats, etc.)

Yes

If yes, which ones?

Document formats: which format of storing (adapted) scientific materials is perspective to use in the future? We would like to move from plain text to structured document, note to lose the document structure. The ideal format should be automatically converted to AMS and Slovak Braille code.

Braille representation: The Slovak mathematic Braille code is 6-dot code. It covers the mathematic expressions at secondary school level. When entering university, students need to learn completely new representation of mathematics (AMS).

Communication with teachers and colleagues: The AMS representation of mathematics is hardly readable for sighted teachers and colleagues. They prefer 2-dimensional representation. This need of written communication with mathematical formulas is really important for practical courses.

9. Are there courses available for learning specific assistive technologies in science learning?

Yes

If yes, please describe your experiences with these courses.

Comenius University Bratislava: The Support centre provides individual courses for students with disabilities and for students of special education - future special teachers. They should learn how to use software and hardware, suitable for their study. Concretely in science learning: using Braille displays.

The second year the Lambda course for secondary school pupils has been offered.

For students of informatics, future teachers of informatics, courses "E-documents accessibility" and "ICT for the handicapped" within university curricula are available.

Access Center Kosice: Offers course for master students in the specialisation "Biomedical Engineering" at Mechanical Engineering faculty TUKE, where in syllabus learning materials about assistive technology for blind and visually impaired, for deaf and with hearing impairment, and also for people with motoric impairments is included. In this course is also included practical work with different assistive technology available at the AC TUKE.

<http://www.tuke.sk/AC/indexACeng.html>

The Access Center also teaches course for students from University of Pavel Jozef Šafarik, bachelor study in specialisation "Informatics for disadvantaged people". They have one semester course "Special software" and one semester "Assistive Technology" also with practical work at the AC. Additionally training for social workers is available - about assistive technology, according the materials developed in the frame of European Socrates Grundtvig project ATTRAIN - Assistive Technology Consultant / Advisor Training Development and Delivery.

10. Are there already courses available for the university staff (professors, tutors, etc.) concerning how to prepare scientific documentation accessible also for blind and visually impaired?

Yes, partially.

If yes, please describe the contents of the courses and your experiences with the courses.

Support Centre in Bratislava: A workshop about the accessibility of web pages and e-documents was prepared for teachers and web providers, that had very positive reaction. In this academic year we are preparing a set of workshops focused on this topic.

Access Center Kosice: Training also for teachers about assistive technology, accessible materials, teaching of math, and so on is available, using the materials developed in the frame of European project ATTRAIN - Assistive Technology Consultant / Advisor Training Development and Delivery. This training is on demand by teachers. Usually teachers are trained by AC staff according the demand of teachers (if they have in group student with visual impairment or blind students).

Comenius University Bratislava, report prepared by dr. Elena Mendelová

Technical University Kosice, report prepared by prof. Dusan Simsik

6.10 SPAIN

1. ¿Cuántos estudiantes ciegos y deficientes visuales cursan estudios de carácter científico² en las Universidades de su país?
353, de los cuales 99 son ciegos totales y 254 tiene resto visual aprovechable en los estudios.
2. ¿Cuántos estudiantes en total cursan estudios de carácter científico³ en universidades de su país, discapacitados visuales o no?
No disponemos de estos datos
3. En su país, ¿existe legislación o reglamentación relativa al apoyo o asistencia a prestar a los estudiantes universitarios con necesidades educativas especiales? ¿Podría describirla brevemente?
Las bases de la atención a las personas con cualquier tipo de discapacidad son las que la legislación vigente establece, teniendo en cuenta sobre todo el principio de inclusión del sistema educativo para personas con discapacidad, plasmado en preceptos tan relevantes como la Constitución Española de 1978, la Ley de Integración Social de los Minusválidos (LISMI), la Ley 51/2003, de 2 de diciembre, de igualdad de oportunidades, no discriminación y accesibilidad universal de las personas con discapacidad, y Ley orgánica 4/2007, de 12 de abril, por la que se modifica la ley orgánica 6/2001, de 21 de diciembre, de universidades. (boe 89/2007 de 13 de abril de 2007).
4. ¿Qué servicios especiales están disponibles en las universidades de su país, para el apoyo de los estudiantes ciegos y discapacitados visuales, en particular para los estudios de carácter científico? (V.gr.: preparación de textos de estudio y lectura, orientación, etc.)
Los servicios que ofertan las universidades para alumnos con discapacidad visual son iguales para todas las ramas y especialidades. Normalmente cuentan con un departamento de apoyo al alumno con discapacidad desde donde le apoyan tanto en el tema de orientación y movilidad como en la consecución de los materiales didácticos en soporte digital. Estos departamentos están en contacto con la ONCE para hacernos llegar peticiones mas específicas. Además el alumno cuenta con un maestro de apoyo de la ONCE a que transmitir los problemas de acceso a sus estudios.
5. ¿Quién está prestando estos servicios? (Vg.: servicios o Departamentos de apoyo de las propias universidades, editoriales, organizaciones externas, etc.)

² Ver nota 2.

En España los servicios de apoyo a los universitarios con ceguera o discapacidad visual grave se prestan desde los Departamento de apoyo al alumno con discapacidad y desde la ONCE.

6. Los servicios de apoyo de las universidades, ¿adaptan la documentación científica que deben emplear los estudiantes ciegos o discapacitados visuales?

Sí

No

En caso afirmativo, se ruega describir con detalle el proceso de adaptación y preparación.

Si como adaptación entendemos dar a los alumnos con discapacidad visual los materiales en formato digital, podemos contestar que sí.

En caso negativo, se ruega explicar las causas.

Decimos que no por que todo aquel material que haya que transcribir al braille o en relieve lo realiza la ONCE

7. Los servicios universitarios, ¿trabajan conjuntamente con las editoriales o los proveedores de materiales digitales durante el proceso de adaptación y preparación de documentación científica a emplear por los estudiantes ciegos o discapacitados visuales?

No tenemos información. La ONCE si que trabaja con las editoriales.

Sí

No

En caso afirmativo: ¿En qué forma llevan a cabo esta colaboración?

La Once trabaja con las editoriales para que los materiales se produzcan de forma accesible para que no haya que adaptarlos con posterioridad.

En caso negativo, se ruega explicar las causas.

-
8. ¿surgen problemas o dificultades durante el proceso de adaptación o preparación de documentación científica para los estudiantes ciegos o discapacitados visuales? (tiempo, formatos, etc.)

Sí

No

En caso afirmativo: ¿cuáles?

El mayor problema es que el material le llega al alumno con discapacidad mas tarde por el tiempo que se necesita para adaptar. A veces determinados formatos pueden ser más complicados para su uso.

9. ¿Se dispone de cursos⁴ en tecnologías asistivas específicas para el aprendizaje/enseñanza de las Ciencias?

Sí

No

En caso afirmativo, se ruega describir su experiencia con dichos cursos.

En caso negativo: ¿piensa que ofrecer cursos de tecnologías asistivas específicas sería útil para el aprendizaje/enseñanza de las Ciencias? ¿Por qué?

Creo que todo lo que se haga para favorecer la realización de los estudios a los alumnos con discapacidad puede resultar positivo.

10. ¿Hay cursos disponibles para el staff de la universidad (profesores, tutores, etc.), relativos a cómo preparar documentación científica accesible también para los estudiantes ciegos y deficientes visuales?

Sí

No

En caso afirmativo, se ruega describir los contenidos de estos cursos y sus experiencias en este terreno.

Son cursos que organiza la ONCE para aquellas universidades que estén interesadas en formar a sus profesores sobre discapacidad visual. Consisten básicamente en dar una visión general de cómo ve una `persona con problemas visuales graves y como de tiene que enfrentar todos los días a los obstáculos que s encuentra en el camino. Se programan sesiones de braille de adaptación de materiales, de tiflotecnología de autonomía. En general se les dan orientaciones generales de todas las áreas específicas relacionadas con la discapacidad visual.

En caso negativo, ¿piensa que sería útil ofrecer cursos para el staff universitario (profesores, tutores, etc.) sobre cómo preparar la documentación científica de forma que también sea accesible a los estudiantes ciegos y discapacitados visuales? ¿Por qué?

⁴ Dirigidos a estudiantes afectados por una discapacidad visual.



7 APPENDIX 2: UNIVERSITY SUPPORT SERVICES WITH SPECIAL EXPERTISE FOR STUDENTS WITH VISUAL IMPAIRMENT IN SCIENTIFIC COURSES

7.1 Austria

Institut Integriert Studieren, Linz university

<http://www.integriert-studieren.jku.at/>

University of Graz,

<http://www.uni-graz.at>

University of Klagenfurt

<http://www.uni-klu.ac.at>

University of Vienna

<http://www.univie.ac.at/>

7.2 Belgium

Katholieke university, Leuven

<http://canada.esat.kuleuven.be/docarchwebsite/>

7.3 Czech Republic

Masaryk University, Brno

<http://www.teiresias.muni.cz/>

University of Praze

<http://www.tereza.fjfi.cvut.cz>

Palacky University, Olomouc

<http://www.upol.cz/skupiny/studenti/poradenstvi/centrum-pomoci-handicapovany/>

7.4 France

Université Pierre et Marie Curie, Paris

<http://www.upmc.fr/FR/info/00>

Relais Handicap Santé

<http://www.rhs.upmc.fr/>

Université de Toulouse

<http://www.univ-toulouse.fr/>

Università de Lyon 2

<http://www.univ-lyon2.fr/>

Università de Provence, Aix - Marseille I

<http://www.up.univ-mrs.fr/document.php?project=up&locale=fr&doc=handi-site>

Univesité d'Orléans

<http://www.univ-orleans.fr/vie/handicap/>

7.5 Germany

Karlsruhe university, studienzentrum für Sehgeschädigte - Veröffentlichungen in

<http://www.szs.uni-karlsruhe.de/432.php>

University of Stuttgart - Visualization and Interactive Systems Group

<http://www.vis.uni-stuttgart.de>

University of Dresden

<http://elvis.inf.tu-dresden.de/func.htm>

7.6 Hungary

KFKI, Budapest

<http://www.kfki.hu>

7.7 Italy

Politecnico di Milano

<http://www.polimi.it>

Università degli Studi di Camerino

<http://www.unicam.it>

Università degli Studi di Napoli Federico II

<http://www.disabili.unina.it>

Università degli Studi di Milano

<http://www.unimi.it>

Università degli Studi di Modena e Reggio Emilia

<http://www.asd.unimore.it>

Università degli Studi di Padova

<http://www.unipd.it>

Università degli Studi di Udine

<http://www.uniud.it>

7.8 Ireland

University College Cork

<http://www.ucc.ie>

University College Dublin

<http://www.ucd.ie>

7.9 Scotland

Electronics & Electrical Engineering - University of Glasgow

<http://www.elec.gla.ac.uk>

7.10 Slovak

Technical university of Košice

<http://www.tuke.sk>

Comenius university, Bratislava

<http://www.uniba.sk>

7.11 Spain

Universidad de Granada

www.ugr.es

http://ve.ugr.es/page.php?pageid=gae_interven

Universidad UAB Barcelona, institut Català d'Assistència i Serveis Socials

<http://www.uab.es/servlet/Satellite?cid=1087552537597&pagename=UAB%2FPPage%2FTemplatePageLevel2StandardMenuTabs>

Universitat de Barcelona, services for new special needs students

<http://www.ub.edu/acad/en/services/disable.htm>

Universidad de Valladolid, atencion a alumnos con discapacidad

<http://>

www.uva.es/cocoon_uva/impe/uva/contenido?pag=/contenidos/serviciosAdministrativos/otrosServicios/secretariadoAsunstosSociales/programaIntegracionDiscapacidad/AtencionAlumnosConDiscapacidad&tamLetra=&idMenus=

Universidad de Castilla - La Mancha, SAED - Servicio de Apoyo al Estudiante con Discapacidad

<http://www.uclm.es/organos/vic%5Falumnos/saed/>

Universidad de Sevilla, Programa de Ayuda para Estudiantes con Discapacidad (PAED), de la Universidad de Sevilla

http://www.ucm.es/info/solidarios/frames/f_delegado.htm

7.12 France

Université Pierre et Marie Curie, Paris

<http://www.upmc.fr/FR/info/00>

Relais Handicap Santé

<http://www.rhs.upmc.fr/>

Université de Toulouse

<http://www.univ-toulouse.fr/>

Università de Lyon 2

<http://www.univ-lyon2.fr/>

Università de Provence, Aix - Marseille I

<http://www.up.univ-mrs.fr/document.php?project=up&locale=fr&doc=handi-site>

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<http://www.univ-orleans.fr/vie/handicap/>