

## Catalogue of Good Practice



## The RoboBraille Service in Education Project

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## Introduction to RoboBraille

The RoboBraille service was invented by Lars Ballieu Christensen and Svend Thougaard, and has won several international awards since 2007. As a result of benevolence and cooperation with financial and professional partners, the service has gained a foothold in a number of countries across the globe; primarily institutions dealing with those who are visually impaired, dyslexic or illiterate. Before implementation, RoboBraille was simply an idea.

### *Shaping an Idea*

Since the late 1980s, Svend and Lars have been working on developing ICT-based solutions, aimed towards allowing electronic documents to be accessible to those with visual or reading impairments. The two investors pursued a goal of generating an easier, faster and cheaper way of producing materials for educational purposes. In spring 2004, Lars and Svend sat down to discuss possible solutions on how to simplify the electronic production of Braille, without jeopardising the quality of the produced material.

Moreover, they wanted to develop a solution capable of attracting people from outside the very small group of Danish Braille users, and thus build the foundation of a viable service - RoboBraille as we know it today.

The solution was essentially inspired by the many digital self-service solutions used in areas such as airports and cinemas;

**"It must be possible to develop an email service which is able to receive documents via e-mail and then return them to the user, after the service having automatically converted the documents into an alternative format. If we, besides Braille, can create alternatives to the written materials in synthetic speech, then the solution will be attractive to both dyslexic and illiterate users, as well as people who are visually impaired. By making the solution e-mail based, we will be able to offer the service to people all over the world",**

**Lars Ballieu Christensen.**

### *The Release of First Version of RoboBraille*

It did not take long to implement the initial idea into the first version of RoboBraille, as after just three months of developing and testing, launch was to occur in August 2004.

In the early stages, the version was named Sensus Auto Mail Responder (AMR), and was capable of converting Danish documents from text to Braille, as well as converting English and Danish documents into synthetic speech, such as audio files in MP3 format.

Shortly after release the service was renamed RoboBraille, and quickly became popular in the community of professionals working with visually impaired people.

Leading up to Christmas 2004, the local county management became aware of RoboBraille. The county encouraged the inventors and Synscenter Refsnæs (The Danish Centre for Visual Impairment – Children and Youth) to apply for E. funding, so that the service would expand into other countries.

The council assisted the RoboBraille team with the application work via the use of their vocational advisors and office in Brussels.

### ***RoboBraille Enters EU***

In May 2005, Synscenter Refsnæs applied to the EU Commission for funding of project, wherein the RoboBraille service could be localised and tested in Ireland, Great Britain, Italy, Portugal and Cyprus. The project was implemented in 2006-2007 and was a notable success. Three general results of the project:

- That a range of new speech accounts were added to the RoboBraille service (British English, Italian, Portuguese and Greek).
- That RoboBraille became capable of producing Braille in English, Italian, Portuguese and Greek.
- That the RoboBraille user interface became customisable in the aforementioned languages.

During the process, RoboBraille also received donations from France and Lithuania, which consequently extended the language scope of the service to include speech in both French and Lithuanian.

RoboBraille was elected “project of the month” by the EU Commission, and in December 2007, RoboBraille was named by The British Computer Society as the winner of the highly acclaimed Social Contribution Award 2007.

### ***Multi-year Subsidy Ensured the Running and Development of RoboBraille***

For the purpose of taking the development of RoboBraille even further, Synscenter Refsnæs continued its fundraising activity, and succeeded in obtaining funds from two Danish ministries. The Ministry of the Interior and Social Affairs granted the RoboBraille service a multi-year subsidy as an amendment to the Danish State Budget from 2008 to 2011. Furthermore, The Ministry of Education funded the service in 2008-2009 in a project aimed towards developing the service potential of helping those with dyslexia and reading difficulties.

The financial resources aid daily operation, including technical support and future development of RoboBraille. An aim has been to include other languages (German, Spanish, French and Russian), different document formats (pdf, scanned documents) and publishing formats (DAISY - structured audio books, formatted Braille). In addition, funds are used for developing basic, new functions such as formatting and word division of Braille. On this basis, it is possible to consolidate the production of Braille in Denmark and base it on RoboBraille technology. This achievement is the result of collaboration between RoboBraille and Nota (The Danish Library for the Blind).



The main aim of this current project was to discover RoboBraille's impact in education. This was achieved by carrying out the following tasks:

- Describing new developments in the RoboBraille Service
- Investigating current practices in the use of RoboBraille
- Developing a RoboBraille methodology and RoboBraille didactics
- Raising awareness of RoboBraille and its uses
- Evaluating the impact of RoboBraille as a service
- Disseminating the findings of RoboBraille research

Arising from these activities, the research team have incorporated the findings of their research in the following catalogue of good practice. This catalogue is designed to offer interested parties and stakeholders an insight into how RoboBraille can help to improve inclusive educational practices across Europe.

To begin, Unit's 1 and 2 will introduce how RoboBraille is being used in Europe as both an assistive technology and learning technology. These brief insights will be explored in more detail in Unit 3, where each partner will present an overview of how RoboBraille is being used in their country. Unit 4 will later expand on each partner's individual activity by summarising the team's European survey findings and outlining future research objectives. To conclude the catalogue, Appendix A will present a step by step guide on how to use RoboBraille and outline some future features.

## **Unit 1: RoboBraille as an Assistive Technology**

As an assistive technology, RoboBraille can be used to create content that is accessible for individuals with either visual impairments or specific learning difficulties.

With RoboBraille you can produce speech, braille, ebooks and DAISY audiobooks from almost any kind of file type. You can also use RoboBraille to convert your file to another document format. These supports are available as a four step process through the RoboBraille website or as an email service.

### ***Supporting blind students and students with visual impairments***

Since 2004, the RoboBraille service has helped thousands of blind individuals and those with visual impairments to access learning materials and recreational reading materials. A portion of this positive impact is exemplified in the following comments:

**“As a teacher I am an enthusiastic user of RoboBraille, I use it to transform my course material into audio files. This helps me as a teacher as well as my students, sighted or unsighted. RoboBraille converts not only my teaching material, but converts also my idle time in pleasant “reading” time (articles, essays, magazines)”**

**Giorgio, an Italian teacher**

**“I was very skeptical at the beginning about RoboBraille; I was sure it would not stay “free” after the first few months. Now I realize how much time I have saved in the last 3 years, just by converting study material through RoboBraille; and my academic achievements have improved. Thank you RoboBraille.”**

**Franco, an Italian student**

Together, these comments highlight the inclusive impact RoboBraille has had in special education to date. Through the range of assistive technologies offered by RoboBraille, many thousands of students can now have equal opportunity to access both learning materials and recreational reading materials.

***Supporting students with a specific learning difficulty***

Having dyslexia, or any specific learning difficulty, can make it difficult for students to engage with books or other paper-based reading materials. Whilst the nature of such literacy difficulties can be unique to each person, the universal benefits that can be gained from using RoboBraille are easily transferable:

**“When I was first diagnosed with Dyslexia in college, I was introduced to RoboBraille and shown how to convert all my documents into audio files that I could listen to as often as I needed. For the first time in my life, I was able to learn just as fast as my friends. Having dyslexia means that I have difficulty reading and spelling, but through RoboBraille, I no longer feel disadvantaged, I feel empowered.”**

**Niall, an Irish student**

**“RoboBraille is a regular part of our workday. First of all we train teachers to be able to create MP3-files of the class’ study material. Secondly, we create audio files with the students’ own notes because people with reading disabilities often find it hard to read their own writing. When students can convert their notes to MP3-files with RoboBraille, their learning enhances. Thirdly the service has helped us transform all our course material into audio, which is now available online. This means that if you are visually impaired or dyslexic and want to study here you can access all necessary information about courses and enrolment procedures on your own.”**

**John, UK teacher**

For similar stories and a more in-depth look at how RoboBraille has positively affected lives in Europe, please see unit 3 of this catalogue which presents each partner’s experiences and histories with RoboBraille. Also, please visit [www.robobrainle.org](http://www.robobrainle.org) for videos of students who have benefitted from using RoboBraille.

The next unit introduces how RoboBraille is being used as a mainstreamed learning technology throughout Europe.

## Unit 2: RoboBraille as a Learning Technology

Whilst RoboBraille is primarily an assistive technology, it can also equally be considered as a learning technology. Learning technologies are regarded as universally beneficial to all students and teachers who wish to transform traditional learning materials into more innovative, individualised and effective experiences. The following sections will present two areas where RoboBraille has been shown to be effective both inside and out of the classroom.

### *Using RoboBraille to help with learning a new language*

Dr. Eva Garmenthy, (Hungarian research partner) reports that text-to-speech services are useful for supporting correct punctuation and dialect in language learning. Auditory learners and students with dyslexia are encouraged to use the RoboBraille Service to improve performance:

**“Everybody says that learning foreign languages is particularly hard for dyslexic students. RoboBraille helps me with the correct pronunciation and by following the written lines on the screen, I also improve the spelling”**

*Lora, Italian student*

### *Using RoboBraille to support flexible learning*

With the growing emphasis on learning preferences and learning styles throughout education, tools like RoboBraille are becoming increasingly popular as a way to become a more strategic, flexible and effective learner. As an insight into this process, the below comments highlight that with RoboBraille, students are no longer restricted to study in traditional settings:

**“Do I miss the smell of paper? Yes, perhaps, but thanks to RoboBraille, no more long unstimulating sitting in front of a PC with complicated hw and sw to sort out. On my night table now I keep a tiny electronic device, an I-Pod that contains lots of study material to read at my own pace before sleeping time.”**

*Maria, Italian student*

**“In balancing work and my studies, it is sometimes hard to find the time to study. That’s why RoboBraille is so useful for me, it means that I can listen to my lectures on the train into college and revise for my exams on the couch or in bed!”**

*Chris, Irish student*

Dr. Mike Goldrick, (Irish research partner) promotes the use of RoboBraille to all students in National College of Ireland. Mike has found that overall exam performance is vastly improved when students combine the use of audio notes with more traditional forms of studying, such as reading and note-taking.

As can be seen from this unit, RoboBraille is being used throughout Europe as both an assistive technology and a learning technology. This is a positive step towards fostering a mainstreamed approach to education and increasing inclusive education practices throughout the education sector.



POT is closely affiliated with the St. Barnabas School for the Blind, the educational institution for individuals with vision impairment.

The School was established in 1929 and since then its structure underwent major changes. From a full time boarding School, the School is now a resource center offering support and services to integrated students in primary higher and university settings.

### ***RoboBraille in POT***

The RoboBraille service was initially introduced to POT in 2006 when the Organization became a partner to a pan-European consortium whose aim was to validate the RoboBraille service in various European countries. For POT, the 2006 – 2008 project that was financially supported by the European Commission under the eTEN programme introduced to a number of Greek speaking users the email based service that converted free of charge their documents into synthetic speech and Braille.

In 2011, when POT became a member of the LDV Learning Partnership project whose aim was to test the RoboBraille Service as an educational tool, the Organization worked closely together with the St. Barnabas School for the Blind. Among its services, the School offers to integrated visually impaired students and their educators both advisory support as well as after school teaching in information technology. The School also has the responsibility for the transcription of all educational material used by the students. For this reason the School was capable to reach out to the target audience.

During the testing phase of the project, students, teachers and transcription officers were introduced to the RoboBraille Service through a number of hands on workshops and the dissemination of various leaflets.

Below, we list some testimonials we recorded from various users of the Service:

### ***A review of Robobraille of teachers and students in POT***

**“I find it very helpful for converting inaccessible PDF material given from my teachers. I would like to be able to use it at school right away to convert the material but I can’t because I don’t have access to internet services.”**

***Andreas, Age 15, total sight loss, High school student***

**“I find it easy and accessible. I am very satisfied with the PDF to text conversion since most of the material I get is on line and inaccessible. I do prefer using Robobraille than getting transcribed material from the University Services.”**

***Michael, Age 20, partially sighted, undergraduate student***

**“It is easier uploading material using my e-mail account instead for the website, because of the difficulties accessing the site with my screen reader. Other than that, it is a great tool for me.”**

***Kyriacos, Age 16, Total sight loss, High school student***

**“I don’t have to worry about accessibility, regarding the material I give him, because I know he can easily convert the PDF documents, and be able to read them”**

***Popi, Mainstream IT Senior, High School Teacher***

**“I would like more students to use it, so that we will not spent valuable time, just converting PDF to text documents, when they can easily do it themselves with this service”**

***Maria, Transcribing Services, School for the Blind***

**“It has been very helpful for me, because it makes my job easier and faster since the conversion is done, while I can work on something else”**

***Sofia, Transcribing Services, School for the Blind***

**“RoboBraille is a quick and easy solution to the numerous inaccessible PDF files I have to access from the e-learning platform in order to complete my weekly assigned readings. In the past I found it so frustrating to always have to wait to get assistance from others to make my studying material accessible. Ever since the RoboBraille service added the conversion feature it become my right hand in my studies”**

***Maria, Total sight loss, age 39, Open and Distance learning, University Student***



### ***Sensus Aps:***

Founded in 1987, Sensus is a research-based consultancy organisation specialising in accessibility and inclusion technology. Sensus is a leading European authority on accessibility and accessible design for people with special needs, and a founder member of the eAccess+ thematic network ([www.eaccessplus.eu](http://www.eaccessplus.eu)), funded by the European commission.

Sensus is the lead developer of various inclusion technologies such as Biblus, digital library for blind and partially sighted; VI Reader, the e-book reader for partially sighted and the RoboBraille service, and collaborates actively with organisations such as educational institutions, NGOs and disabled persons member organisations on a global basis to exploit the possibilities of RoboBraille for the benefit of learners with special needs, and to further develop the service to meet the needs of the visually and reading impaired, immigrants and illiterates.

### ***How RoboBraille is used at Synscenter Refsnæs/Sensus:***

The RoboBraille Service is an inclusion technology that supports education in 4 areas: as a personal assistive technology for blind or partially sighted students and staff; as a learning technology for all students; as an accessibility tool for teachers, educators, VI professionals, parents and other relatives of blind or partially sighted children and as part of the production of educational material in alternate formats.

Synscenter Refsnæs and Sensus are making great efforts to disseminate information and knowledge about the RoboBraille Service through courses, workshops, presentations, articles and individual training sessions.

For all blind and partially sighted individuals, being included in education and society is extremely important. Using RoboBraille as a personal assistive technology ensures access to textual information in a non-stigmatizing way as RoboBraille is online and available without having to install or buy additional hard- or software.

Experience from teaching practices both at Refsnæs and in mainstream settings, suggests that the use of more sensory modalities when obtaining textual material, e.g. both reading and listening, can increase the amount of acquired educational material by the students. As such RoboBraille is presented as a learning technology for all students who wish to be more effective using the audio conversion possibilities.

Educators, teachers, VI professionals, parents and other relatives of blind and partially sighted, use the accessibility conversion services of RoboBraille. Very often, textual material is not accessible using screen readers and other assistive technology. Using RoboBraille for conversion of inaccessible document types to more accessible document types is essential.

Alternate media producers at Refsnæs and Sensus use RoboBraille as a component when producing Braille, DAISY books and e-books. As RoboBraille offers services in all major European languages and some minor, it is used both for educational material in Danish and as part of foreign language learning.

***A review of RoboBraille by students in Denmark***

RoboBraille Review by Anders Boholt, high school student and Thomas Byskov, studying to become a teacher, both of them blind.

**Anders use RoboBraille in 3 areas: in education, in his voluntary work as a committee member and for personal use. In high school, a vast number of documents are inaccessible as many of them are PDF documents that cannot be read using assistive technology.**

**As an example, Anders explains: During a lesson in English, the class was presented with assignments in hard copy paper. The professor did have the electronic file but only in PDF format but using RoboBraille Anders was able to convert the document on the fly. As a committee member, Anders uses RoboBraille to convert newsletters to DAISY books before distributing them to other members. The accessibility conversion is most essential to Anders as it offers privacy as well as accessibility.**

**Anders Boholt**

**Thomas use RoboBraille everyday studying, not only as personal assistive technology but as a learning tool.**

**The professors at the academy tend to find lots of different educational material for the students and they vary from pictures, movies, old historical documents or reviews on the internet to actual books. This makes it very interesting to study but also a challenge to get alternate format produced. From an early start, Thomas's professors agreed that they would provide the textual material one day ahead in order to make them accessible.**

**Hereby the professors changed their approach to meet his need and it improved the quality of educational material presented in general as everybody benefits from more structured and enhanced teaching material. Thomas explains: "For me, former high school student, now studying to become a teacher, RoboBraille has been vital. I used the service to convert compendiums that were to be used in lessons the next day. I experienced a fantastic improvement, because I could get immediate access to textual information that used to take several days to be produced by professionals. Off course, some errors do occur but the overall quality is satisfying and I can read it easily .Moreover, I see RoboBraille as a very efficient tool for me as a certified teacher, should I have pupils with Dyslexia in my future classes, who need alternate formats to learn effectively".**

**Thomas states that he would have serious difficulties in completing his education could he not use RoboBraille, both in terms of accessing information and in using auditory modalities when studying.**

**Thomas Byskov**



- **Dyslexic student can choose own stories to read with the help of the RoboBraille program.**

**Anna, English teacher**

Antal is a young teacher who teaches German language in a secondary school. He uses RoboBraille to make the learning more interesting.

**Students write short compositions on themselves, and convert the text to audio. Using the same voice by the RoboBraille program, the task is to find out who has written the composition. As a homework each student had to write a question to each topic they recently learned, and had to convert it to audio file. The teacher has inserted the audio files into a ppt file. Nobody knew which sign is which question. They clicked and had to reply to the questions. Students wrote composition to a given topic for homework. The teacher has corrected the texts, and the students had to convert the text to voice. They had to learn it by heart. It was their own text, and it was easier to learn through audio-visual aid. Groups of students had to choose a story from many possibilities, and they had to form cartoons using RoboBraille and Pixton.**

**Antal, Language teacher**

Joli is a 30 years old teacher. She got a sever ophtalmia right when she had the exam period in her postgraduate studies in English.

**I was unable to read at all. I could look neither to a book nor to the screen of the computer. I was just going to give up, when I heard about the RoboBraille program. My husband has scanned the texts and got the text in mp3 files for me. I later passed all of my exams, and have spared a year for myself.**

**Joli, Hungarian student**



High school and university students create their own audio files of documents downloaded from the Internet, lecture notes, summaries, text of presentations and slides, non-accessible documents (page snapshots), study material in general.

#### **A review of Robobraille of teachers and students in ANS**

ANS experience is that the use of audio files improves academic achievements and builds up confidence and self-esteem in the students.

**As a teacher I am an enthusiastic user of RoboBraille, I use it to transform my course material into audio files. This helps me as a teacher as well as my students, sighted or unsighted. RoboBraille converts not only my teaching material, but converts also my idle time in pleasant “reading” time (articles, essays, magazines).**

**GIORGIO V.I. TEACHER**

**“Do I miss the smell of paper? Yes, perhaps, but thanks to RoboBraille, no more long unstimulating sitting in front of a PC with complicated hw and sw to sort out.**

**On my night table now I keep a tiny electronic device, an I-Pod that contains lots of study material to read at my own pace before sleeping time.”**

**SONIA – HIGH SCHOOL STUDENT**

**“I am a support tutor of two primary school students with reading difficulties. They find Paola’s voice (Loquendo) of RoboBraille fantastic and I find the conversion from text to speech so easy, fast and reliable. And free!”**

**MARIA – SUPPORT TEACHER**

**“I was very sceptical at the beginning about RoboBraille; I was sure it would not stay “free” after the first few months. Now I realize how much time I have saved in the last 3 years, just by converting study material through RoboBraille; and my academic achievements have improved. Thank you RoboBraille.”**

**FRANCO – UNIVERSITY STUDENT**

**“I have finally decided to improve my terrible English pronunciation; the English accent of RoboBraille is excellent; next time I meet an English speaking person I will feel more at ease.”**

**GINO – LIFELONG LEARNER**



*A review of Robobraille of teachers and students in The National College of Ireland*

**“In balancing work and my studies, it is sometimes hard to find the time to study. That’s why Robobraille is so useful for me, it means that I can listen to my lectures on the train into college and revise for my exams on the couch or in bed!”**

**Rob, 26, Student**

**“When I was first diagnosed with Dyslexia in college, I was introduced to RoboBraille and shown how to convert all my documents into audio files that I could listen to as often as I needed. For the first time in my life, I was able to learn just as fast as my friends. Having**

**dyslexia means that I have difficulty reading and spelling, but through RoboBraille, I no longer feel disadvantaged, I feel empowered.”**

**Ryan, 32, student**

**“I use Robobraille to help me read over my lecture notes and learn off case studies. I also use it to help me learn off new vocabulary as strategic management and marketing has a lot of theories and terms that I find hard to pronounce. I find the email service very fast and the voice is nice.”**

**Emma, 24,**

**“I wasn’t aware that RoboBraille had this functionality. Typically when supporting a student, we look at commercial solutions first, but if RoboBraille can help our students just as easily and even more easily, then why not use it and promote it!”**

**Mary, 27,**

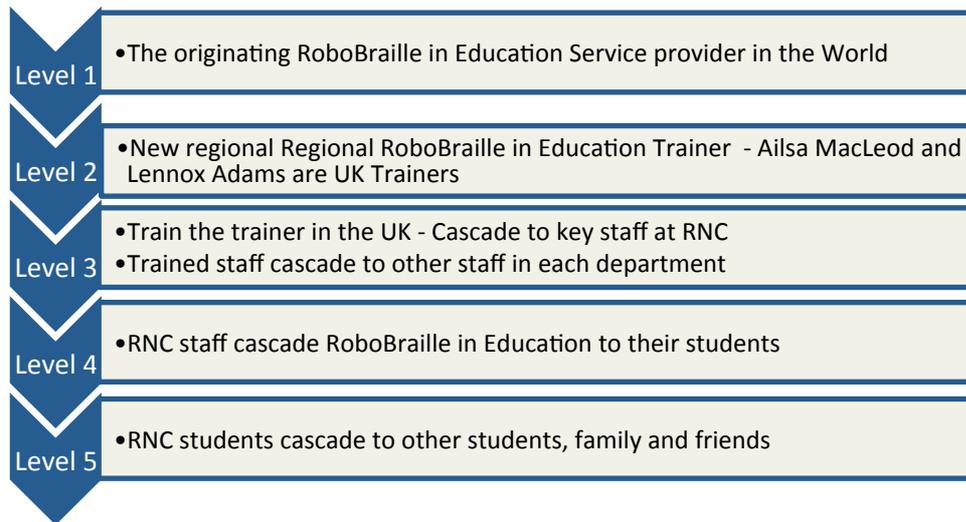


Stage 4: Students are supported by staff as RoboBraille services are integrated into classes

Stage 5: Students routinely covert work into their preferred working medium, which should continue after they leave RNC and move into other educational establishments or to employment

***A review of Robobraille of teachers and students The Royal National College for the Blind***

The plan for cascading RoboBraille knowledge at RNC is shown in the model below:



**Level 1 Statement:** Please see [www.robobraille.org](http://www.robobraille.org)

**Level 2 Statements:**

**I am really impressed by the ease of converting text into mp3 via email**

**Alisa MacLeod, Trainer**

**I am pleased to be associated with RoboBraille in Education. I have no problem in recommending a good service**

**Lennox Adams, Trainer**

**Level 3 Statements**

**The service worked very well, and will, I'm sure, be a useful tool in the classroom to give teachers and students speedy access to alternative media. In the teaching of languages, and literature, there are very obvious benefits, but even in Maths (my area) the Robobraille service will provide flexibility and more variety of ways to present information to students.**

**Katie Storm, Numeracy/Mathematics Teacher, Visual impairment: None**

I did not get chance to try out the website last night as we had unexpected visitors. I tried it out first thing this morning and I received a return e-mail almost immediately. I really enjoyed the training sessions you put, thank you and thank you for the notes. I was able to demonstrate its use to a student who used it immediately. I have replies from two emails sent last night and have listened to them this morning. I enjoyed the sessions and found them very informative.

Cary Frost, Personal Tutors for Adult Learners  
Visual impairment: Myopia

Very easy for teachers and students to use. Very useful for visually impaired students and those who have difficulties learning from text to send word docs to convert to mp3s to listen to information. For dyslexic students sending word docs to convert to mp3s to listen to information.

Amanda Murphy, Humanities Teachers  
(Languages) Visual impairment: None

#### *Level 4 statements*

I love the voices particularly Britspeak, as I'm able to sit back and listen to my work without worrying

Brendon Jones, Younger RNC Student,  
Visual impairment: LMBBS

This will be helpful when it comes to revising

George Marshall, Mature RNC student,  
Visual impairment: Glaucoma

Getting my work in mp3 saves me time; makes my work better

Alan Ashby, Franklin College student,  
Visual impairment: None

#### *Level 5 statements*

They should have had something like this in my day

Mrs Christina Edwards, VI parent of VI student,  
Visual impairment: RP

This Unit has described instances of good practice taking part in each of the partner's institutions. For more information on each partner's experience of using RoboBraille as a learning technology and an assistive technology, please visit [www.RoboBraille.org](http://www.RoboBraille.org). Alternatively, please contact the following members of the RoboBraille research team:

***The Research Consortium***

<b>Partner Institution</b>	<b>Lead contact</b>
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## Unit 4: RoboBraille usage in Europe: Results from Survey

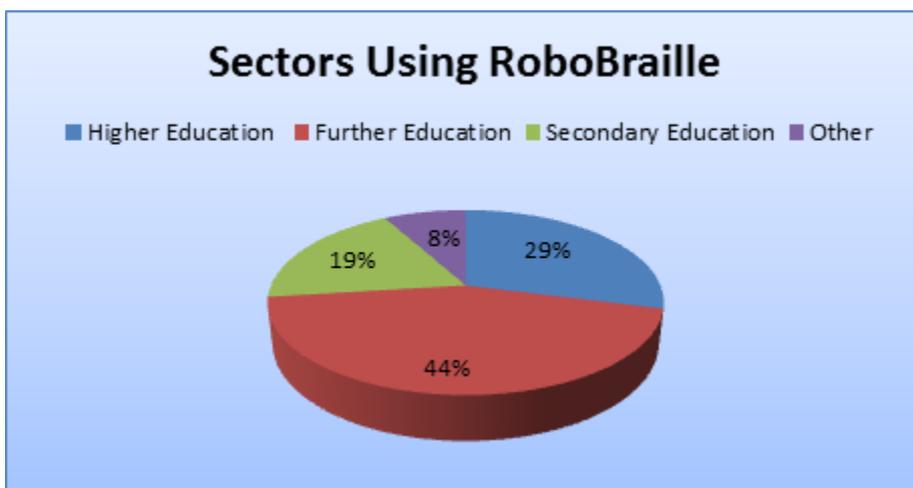
As part of this project, the RoboBraille Research team carried out a series of surveys to identify the, types of users, benefits and the future needs of RoboBraille users.

### Statistics Summary

- 158 overall respondents across Europe.
- 83 Educators.
- 75 students.
- Universities, Higher education institutes, special education facilities, mainstreamed schools and charities.

### Sectors using RoboBraille

Of the 158 users who responded to the online survey, 145 opted to answer what sector of education they belonged to, either as a student or as an educator. As can be seen below, the most frequent answer chosen was Further education (44%), followed by Higher education (29%), Secondary education (19%) and other (8%).



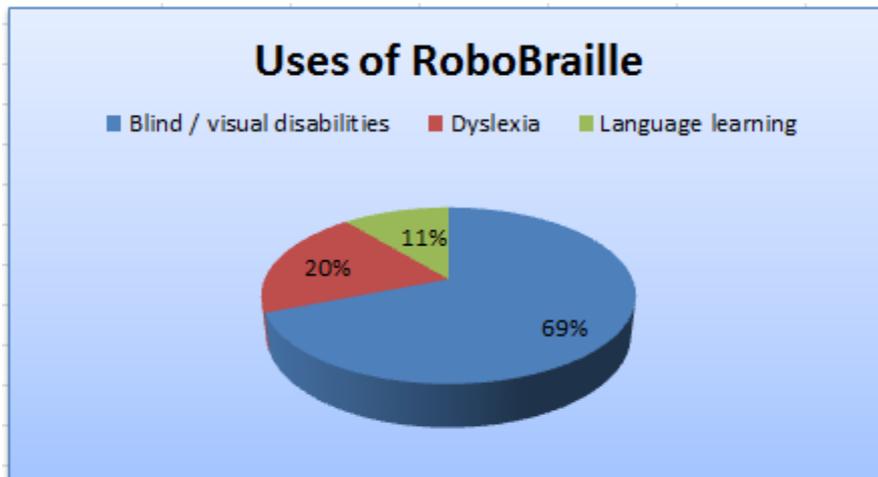
(Chart 1.1 Sectors using RoboBraille)

Whilst all relevant levels of education are represented, it is expected that usage within Higher Education will increase as good practices are disseminated locally by partners and internationally through conferences.

### Uses of Robobraille

Similarly, of the 158 respondents, 144 identified through their personal statements how RoboBraille has positively affected their lives. As expected, a high percentage of these users (69%) are blind or visually impaired. A further 20% of respondents indicated that they have Dyslexia and that the Service is beneficial in supporting their attainment of books and other academic materials.

Lastly, a small number of users (11%) claimed that the Service has helped them in language learning activities.



(Chart 1.2: uses of RoboBraille)

Going forward, the Robobraille team is hopeful that the Service can become more widely used as a learning technology and mainstreamed across further universities, schools and other vocational sectors.

### Emerging Themes

Having analysed the data from all survey responses, the team have identified two major recurring themes that will be used to explore future opportunities and improvements to the Service.

#### *Further training and Education needed*

Having analysed the data from the surveys, the consortium have identified that there is a need for more awareness and training for students before they arrive in College/University. Supports such as RoboBraille should become more commonly used in a student’s home life as well as in School. This topic is the central focus of the next RoboBraille project which is due to begin in August 2013.

#### *More support for Mathematics*

Some respondents have highlighted that they would like the Service to be able to support their mathematics learning.

**“I am a student with visual impairments. At present, the solutions for Math are very basic and do not really help my needs. I hope one day, RoboBraille can help solve this problem for blind or visually impaired students.”**

**Aaron, Irish student**

This is an on-going project for the RoboBraille team and it is hoped that a dedicated service for mathematics can become available in the very near future.

## **Further Information**

As we begin to take the next steps in the RoboBraille story, we encourage you as teachers, educators, policy makers, students and family members to become more aware of how to use RoboBraille to help change your lives.

For further information on future projects, and for assistance on how to use RoboBraille, please visit our website at [www.robobraille.org/](http://www.robobraille.org/) and our step-by step guides at <http://www.robobraille.org/rb/subpage1692.aspx>

Finally, we would like to thank you for reading this catalogue of Good Practice, if you should have any queries or suggestions, please feel free to get in touch with us.



## The RoboBraille Service in Education

### Catalogue of Good Practices

Project no: 2011-1-DK1-LEO04-03569



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