

# Bridging the gap between high school and University studies for student with disability

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**Abstract.** The choice of the university program represents an important and difficult step for a large part of high school students, especially for those who have to change city and lifestyle to follow their ambitions. In particular, for student with disabilities this choice is even more complicated due to their specific needs concerning both the educational and the everyday life. In order to bridge the gap between high school and the University of Pisa, supporting the students during the selection of the program and their stay in Pisa, this paper presents a new model for matching the needs of the students and the existing services in Pisa, with particular attention to those with disabilities. It is based on questionnaires to assess the needs of the students and an accessible website to make available information about places and services offered in Pisa and its surrounding.

**Keywords.** Student with disability, Welcome, Accessible website, Personal services, Services, University of Pisa, Pisa

## 1. Introduction

The choice of the vocational university program represents a critical step in the life of all students at the end of the high school, with anxieties and concerns [1],[2]. Main concerns raise for example from the fear to deal with new matters, the need to change city to follow the desired program, etc. This choice is even more complicated for students with disabilities, as they usually require specific tools, devices and environmental solutions to be enabled to follow and interact with the classes or to perform exams. Moreover, others complicating factors are the need of a caregiver and helps during the studying activities. The uncertainty to find the correct aid systems at the university and the fear to change environment and habit may lead to choice a university program that does not meet the ambitions, or may lead to stop the career.

In order to easy this choice and bridge the gap between high school and university, the USID (Unità di Servizi per l'Integrazione di studenti con Disabilità) office of the University of Pisa, with the contribution of Fondazione Cassa di Risparmio di Pisa, established a dedicated service in the framework of the project called *Progetto Accoglienza e Pianificazione del Percorso Universitario per Studenti con Disabilità*.

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The main objective of the project is to intercept the ambitions and the specific needs of student with disabilities, both before they have to select the program at the University of Pisa to support their choice and during the program to improve the effectiveness of the educational activities. Furthermore, this project aims to connect students arriving at university, with the services available on the territory of Pisa, not only about healthcare, but also concerning cultural, social and recreational activities. This point is important for the social integration in the new environment, because at present very often students himself/herself fail to reach a complete understanding of what the area could offer implying an under-utilization of available services, with an implicit waste of opportunity for him/her. In other words, the project *Progetto Accoglienza* aims to welcome disabled students, considering not only the educational aspects but also all aspects of the daily life (e.g. wishes, sports, care, etc.).

To achieve the primary goal of bridging the gap between high school and University of Pisa, the project uses a couple of student survey to assess the needs and ambitions for university studies of students with disabilities of the last two years of high school. Indeed, to bridge the gap between the University of Pisa's students and the resources of the territory of Pisa, a very rich charter of services is available on a public website accessible to all students, including those with disabilities through personal devices or a dedicated station, equipped with aid systems, placed at the USID office.

Hereafter, Section 2 presents the surveys used to recognize the student's needs. Section 3 and Section 4 describes the charter of services for the students and the dedicated accessible website respectively. Section 5 presents the results of some preliminary tests with disabled students. Finally, conclusions are drawn in Section 6.

## **2. The Surveys**

The student surveys is a very effective way to assess in advance the specific needs and expectations of each disabled student oriented to continue their studying career, in order to provide him/her a tailored support. The project *Progetto Accoglienza* includes two different kinds of survey, made using specific questionnaires.

The first questionnaire, called *Questionario Conoscitivo*, is provided to all students with disabilities who are attending the 4<sup>th</sup> or 5<sup>th</sup> years of high schools in Tuscany Region, along with information material to allow students and their families to become aware of the educational offer and the services provided by the University of Pisa. These documents help to create the best matching between the desires and ambitions of the students and the real opportunities offered by the university. Moreover, USID staff member can have a preliminary assessment of the specific needs of disabled students that are evaluating a future university enrolment.

The second questionnaire, called *Questionario di Presa in Carico dello Studente*, is intended to clarify the reasons behind the university choice, the kind of disability, the specific needs in terms of services or assistive technology, the daily life habits, the aspirations and the ambitions of students at the time they are considering to start a course at the University of Pisa. In this way, USID staff can help students to find the most pertinent study plan, as well as they can organize ad-hoc meeting between newcomers and registered students involved in the same studies, with or without disabilities. Moreover, USID staff is able to suggest to the students all services and initiatives meeting the student's profiles, and to establish a connection with the relevant associations. This is particularly valuable for students coming from outside Pisa.

### 3. The Service Charter

The service charter is a list of relevant services and activities that is maintained and frequently updated to facilitate the access and the participation of students with special needs to the public services and to cultural, recreational and social life events offered by the territory of Pisa. Many contacts and entities, available in Pisa and its surrounding, are present in the service charter. They range from cooperatives and voluntary operators, cultural, sports and nature associations, up to authorities, institutions, local services and religious organizations. Each of them, to be included in the service charter, filled in a proper questionnaire that allowed the USID staff to assess the type of the offered service/activity, the collaboration that the student can offer and the form of participation in the proposed service/activity.

The contents of the service charter can be accessed by everyone, inside and outside the University of Pisa through a dedicated website (see Section 4). It takes into consideration a wide set of accessibility guidelines to enable students with motor-skill and perceptive disabilities to navigate autonomously the list searching for the desired services. In particular, to facilitate the search all entities have been categorized into ten macro-categories: Public Entities, Care and Health, Participation and Inclusion, Social, Culture, Sport, Environment, Student Association, Spiritual and Cooperation.

### 4. The website

The dedicated website developed within the project *Progetto Accoglienza* represents the main medium to share the information about the service charter (see Section 3) with the widest possible community of student, with particular focus on those with disabilities. Its cardinal purposes are to present, suggest and make it easier the searching of particular service/activity and relevant key characteristics located in Pisa and nearby, favouring the integration of the students in the territory. In particular, the website offers many opportunities to students and people with disabilities because it represents a single and completely accessible point including all kinds of information about educational, cultural, social life. In this way, it represents for them a good opportunity to have a more independent life [3].

#### 4.1. Accessible Design

In order to meet the accessibility requirements of people with disabilities, the Web Content Accessibility Guidelines (WCAG) [4] have been taken as reference for the implementation of the website. Most of the web accessibility laws in the world follow from WCAG. For example, the Italian Stanca law [5] requires a website be perceivable, operable and understandable, eventually exploiting specific assistive technology.

In particular, according to [6] the major categories of disabilities considered are:

- Visual: Blindness, low vision, color-blindness.
- Hearing: Deafness and hard-of-hearing.
- Motor: Inability to use mouse/keyboard, slow response time, limited fine motor control.
- Cognitive: Learning disabilities, distractibility, inability to remember or focus on large amounts of information.

The key points about accessibility adopted for the website implementation are:

- Use of standards HTML5 and CSS3.  
HTML5 pages are more robust to be read by screen readers, and also provide better search engine optimization. CSS allows separating content from presentation style, providing more flexibility and accessibility of the content.
- Skip of repetitive elements on the page.  
A method to skip the navigation menu or other elements that are repeated in every page exploiting a specific link (i.e. Skip to Main Content) at the top of the page, which allows to easily jump to the main content of the page.
- Appropriate alternative text.  
Alternative text provides a textual alternative to non-text content in web pages. It is especially helpful for blind people who, because of their disability, have to rely on a screen reader to have access to the website content.
- Keyboard navigation.  
Within the pages, appropriate keyboard navigation is implemented; it is very important also because most of the alternative input systems rely on it.
- Avoid of dynamic contents within the pages.  
Dynamic contents inside the pages, generated by using Javascript, is not present because the screen readers could have some problems to read them.
- Avoid complex website structure and nested pages.  
A lean structure and a reduced level of nested pages benefits the readability and simplify the browsing experience, especially using aid systems.

#### 4.2. Graphical User Interface

All the web pages are characterized by a minimal structure in terms of texts, buttons and icons. Moreover, they use a linear layout, with high chromatic contrast among the background and the relevant contents. The rationale is to reduce the efforts required by disabled users to browse the website and locate the desired information exploiting the common aid systems (e.g. screen reader, magnifiers, scanning procedure, etc.).



Figure 1 The homepage of the *Progetto Accoglienza* website (Italian language)

Figure 1 shows the homepage of the website, with the welcome message and the main features available for the users. From this page, a new user is enabled to create a new account while a registered user can access his/her personal profile and interact with the system (e.g. searching for desired services, changing personal information and interests, etc.). For all users it is possible to contact the USID staff via the specific email form provided by the website, even if not registered yet.

The registration is managed by a dedicated web page that allows the new user to input the user name and the password for the login, to specify his/her email address and finally to select the categories of services he/she is interested in, choosing them from the list of ten checkboxes matching the service charter categories (see Section 3).

Once the user has logged in, he/she is redirected to the personal area where the most recent services added into the service charter, belonging to the interests chosen, are presented to him/her (see Figure 2). For each service suggested, the name, the opening times, the main contacts, the website, the geographic position and other useful information are shown. This allows the user to know about the service, to inquire easily for further details, and eventually to interact with the service supervisor.

Another important function of the personal area is the possibility to search for services. The website provides three searching methods to logged users. The first method is based on tags and the provided result is the list of services having the typed searching tag or tags associated with. To speed up this search, the overall popular searching tags are included in the tags cloud section. The second method relies on the insertion of the name of the service (or a portion of it). It provides the list of services which names match the searching string. The third and final method enables the user to navigate the list of all services starting from the selection of the desired category.

Additionally, from the personal area the user can change both the personal information and his/her interests at any time.

Finally, since services can grow and change over time, a special user interface is provided to allow USID administrators to update all relevant contents.

The screenshot shows the personal area of a logged-in user. At the top, there is a dark blue navigation bar with the University of Pisa logo and the text 'UNIVERSITÀ DI PISA'. To the right of the logo are navigation links: 'Home', 'Area Riservata', 'Logout', and 'Contattaci'. Below the navigation bar, the user's name 'prova\_user' is displayed. On the left, there is a sidebar with a dark blue header 'AREA RISERVATA' and several menu items: 'Servizi Consigliati', 'Modifica Profilo', 'Cerca Servizio', and 'Logout'. The main content area is titled 'Servizi Consigliati' and contains a message: 'Ciao prova\_user, in base agli interessi che hai selezionato, ti suggeriamo i seguenti servizi. Se vuoi modificare i tuoi interessi, [Modifica il tuo profilo](#)'. Below this message is a table with two columns: 'Collocamento Mirato' and 'Progetto Rebellia'. The 'Collocamento Mirato' entry includes details such as 'Orario: Lun-Mar-Gio-Ven 09.00-12.30 Mar-Gio 14.30-16.30', 'Indirizzo: Via Cesare Battisti, 14 - 56125 Pisa', 'Posizione sulla mappa', 'Telefono 1: 050 929704', 'Telefono 2: 050 929711', 'Invia una mail!', and 'Vai al sito web!'. The 'Progetto Rebellia' entry includes 'Indirizzo: Via Giordano Bruno 42, Quartiere San Martino - Pisa', 'Posizione sulla mappa', 'Invia una mail!', and 'Vai al sito web!'. To the right of the main content area is a 'TACS CLOUD' section with a dark blue header and a list of tags: 'corso', 'celiachia', 'calcio', 'assistenza', 'schermata usi', 'teatro', 'provincia', 'foto', 'sport', and 'salute'.

Figure 2 The personal area of the logged in user, with services suggested basing on the personal interest expressed during the registration (Italian language)

## 5. Preliminary test results

A preliminary test of the website was carried out with 7 users with disabilities of the University of Pisa. The evaluation parameters were the accessibility level of the website and its utility. To this aim, a dedicated station was created at USID office. It consists of a PC with Windows 8.1 OS, 32" monitor, wireless mouse and keyboard, wireless headphones, and additionally equipped with specific hardware/software assistive technology for perceptive, motors and cognitive impairments. Beyond the testing phase, this platform has the purpose of implementing a common point to enable student with disabilities followed by the USID office to access various online services.

**Table 1.** Results of the testing phase: user profiles, aid systems and feedbacks

Education	Age	Disability	Feedbacks
Biology	20	Hearing (deaf)	Clear and usable user interface. Suggestions to improve the personal area: i) shortcut for the search of services by category; ii) more concise presentation of the researched services.
Computer Science	22	Hearing (deaf)	
Cultural heritage	23	Learning	
Performance art	29	Motor	Good level of accessibility with push buttons connected via HelpiBox, scanning keyboard and the mouse/keyboard. Recommendation to use cabled devices instead of wireless ones.
Law	30	Motor	
Computer Science	45	Visual (blind)	Good usability exploiting the screen reader Jaws 15 and screen magnifiers offered by Windows. No particular recommendation.
Literature	46	Visual (low vision)	

Table 1 summarizes the profile of the testing users and the results. In general, users provided positive feedbacks and valid remarks that will be used for the improvement and the fine-tuning of the website. Moreover, a large part of them asked for the possibility to participate actively for the updating of the service charter.

## 6. Conclusion

The main goal of this project is to ease the transition from high school to the University of Pisa, especially for students with special needs coming from outside the Pisa area. This early stage contact between the USID staff and the student high school teachers and family will be fundamental for a proper matching between student expectation and university offer, if any. A further positive effect is the possibility of a greater and more conscious use of the services available at the University of Pisa and in the Pisa area. This benefits the social inclusion and the cultural participation to university and extra-university life, especially for students coming from outside the Region of Tuscany.

## References

- [1] S.C. Berzin and M.S. Kelly, Disability and Post-High School Transition: Does Placement in Special Education Improve Outcomes for Young People?, *Advances in School Mental Health Promotion*, 2009
- [2] .S. Burghstaler, DO-IT: Helping Students With Disabilities Transition to College and Careers, *Research to practice brief*, 2003
- [3] Introduction to Web Accessibility. Available at <http://webaim.org/intro>
- [4] Web Content Accessibility Guidelines (WCAG) 2.0. Available at <http://www.w3.org/TR/WCAG20>
- [5] The Italian Stanca law on web accessibility. Available at <http://www.camera.it/parlam/leggi/040041.htm>
- [6] Web accessibility in mind. Available at <http://webaim.org/articles>