THE NEW VERSION OF THE WEBSITE "THE SOUNDS OF CATALAN". GOALS, IMPROVEMENTS, PERSPECTIVES AND IMPACT

Clàudia Pons-Moll, Josefina Carrera-Sabaté, Enric Blanco-Piñol, Núria Gil-Bordes[1]

[1]*Universitat de Barcelona (SPAIN)*

Abstract

This paper has two goals. On the one hand, to present the new on-line version of website "The sounds of Catalan", available at the URL http://www.ub.edu/sonscatala/, initiated as a project in 2006, published for the first time in 2008, and broadly renovated in 2014. On the other hand, to expose and discuss its impact on one of the official courses (which has as part of its goals the study of Catalan phonetics and phonology) implemented in the degree of Catalan Philology at the Universitat de Barcelona. With this purpose, an inquiry has been conducted within the course Llengua Catalana II (descriptive Catalan linguistics) this second semester 2013-2014. The results of this inquiry are presented in this paper.

Keywords: Teaching innovation, Internet-supported education, Catalan, phonetics, phonology

1 THE WEBSITE "ELS SONS DEL CATALÀ"

1.1 Origin and goals

"Els sons del català" (*The sounds of Catalan*) is a website that was initiated as a project in 2006 and published for the first time in 2006 by a team of the Universitat de Barcelona, composed by Joan Solà, Josefina Carrera-Sabaté and Clàudia Pons-Moll, professors of the Department of Catalan Philology. The official URL of the website, which has free access, is http://www.ub.edu/sonscatala/, and has been recently renovated in order to answer to the new technological needs, such as the access through tablets and cellular phones, or the possibility of self-managing the contents.

"Els sons del català" is essentially aimed at *a*) assisting in teaching and learning the mechanisms of production, transmission and perception of Catalan sounds; *b*) helping Catalan graduate and undergraduate students of those degrees that have phonetics and phonology as object of study or as a working means (such as Philology, Speech Therapy, Linguistics, Translation, Communication, Journalism, among others) in learning both disciplines autonomously, in accordance with the European Higher Education Area guidelines; *c*) improving the teaching of Catalan as a foreign language, by furnishing the learner of Catalan as L2 with the basic devices to acquire the main features concerning the production and perception of Catalan sounds; *d*) providing Internet support materials and resources to those professionals working in fields such as language advising, correction, and speech therapy. (For more information, see [1], [2] and [3]).

1.2 Team and funding

The team, which is available at the URL http://www.ub.edu/sonscatala/en/development-team, was originally composed by Joan Solà, **Josefina Carrera-Sabaté**, and **Clàudia Pons-Moll**. Currently, the project is leaded by the two latter professors, both from the Universitat de Barcelona. The project, though, counts with a wide advisory committee, composed by professors from different Catalan universities, namely: Gabriel Bibiloni (U de les Illes Balears), Eulàlia Bonet (U Autònoma de Barcelona), Teresa Cabré (U Autònoma de Barcelona), Jordi Cicres (U de Girona), Nicolau Dols (U de les Illes Balears), Dolors Font-Rotchés (U de Barcelona), Ricard Herrero (U Catòlica de València), Jesús Jiménez (U de València), Joan Julià (U de Lleida), Silvia Llach (U de Girona), Maria-Rosa Lloret (U de Barcelona), Joan Mascaró (U Autònoma de Barcelona / ICREA Acadèmia), Blanca Palmada (U de Girona), Miquel Àngel Pradilla (U Rovira i Virgili), Pilar Prieto (U Pompeu Fabra / ICREA), Joaquim Rafel (U de Barcelona), Daniel Recasens (U Autònoma de Barcelona), Francina Torras (U de Barcelona), Joaquim Viaplana (U de Barcelona). And also with external consultants from

universities outside the Catalan region, such as Andrew Nevins (U College London), Eduardo Piñeros (U of Auckland) and Rafèu Sichel-Bazin (U Osnabrück). The project, on the other hand, has hired a wide range of technicians, who have worked on the eleboration of specific aspects of the website, and has also hired two interns, **Enric Blanco-Piñol** and **Núria Gil-Bordes**, students at the Universitat de Bacelona, who have worked on the implementation of the new website during the period 2013-2014.

The project has been benefited with various research and teaching grants, from private institutions, like "la Caixa" in association with the Associació Catalana d'Universitats Públiques (ACUP) (RecerCaixa 2011, PI: Clàudia Pons-Moll), la Casa de les Llengües (with two institutional agreements), and from public institutions, such as the Universitat de Barcelona itself (Programa de Millora i Innovació Docent; PI: Josefina Carrera-Sabaté [formerly, Joan Solà]), the Generalitat de Catalunya (with two Ajuts a la Millora de la Qualitat Docent, PI: Clàudia Pons-Moll [formerly, Joan Solà]), and the Institut Ramon Llull (with two institutional agreements).

1.3 Structure and appearance

The website is structured around a tool bar menu, placed at the top and containing the sections **Home**, **Phonemic charts**, **Team**, **Glossary**, **Links**, **News**, and **Funding**, and it is available in two languages, Catalan and English. The appearance of the website is aimed to be attractive, contemporary, simple and fresh (see fig.1).

Fig.1

The **Home** section contains information about the aims of the project, the essential contents of the website and some basic instructions for users. It also includes a link to the Tweeter and the Facebook of the website, where different news relative to the project are being announced and updated in a regular basis. The **Phonemic charts** is the main section of the website and brings the users to the interactive tables, available for different Catalan dialectal varieties and which contain the phonetic symbols corresponding to the vowel and the consonant sounds characteristic of these dialectal varieties (for more information about this section, see § 1.4.1). The **Team** section contains information about the leading team, as well as about the advising committee, and the professionals, interns, and informants that have contributed in the elaboration of the website. The **Glossary** section contains a comprehensive and interactive list of terms related to phonetics and phonology. The **Links** section is made up of a list of websites related to the website, distributed according to the subject. The **News** section offers a selection of the reviews about the website that have appeared in the media, a selection of the presentations of the project, the papers related to it, the teaching, the training, and the organized activities concerning the project. The **Funding** section, finally, acknowledges the financial support the project has received since its foundation in 2006.

1.4 Contents, novelties and improvements

The new version of the website is now powered by Drupal,[1] and has been adapted so it can be used via tablets and cellular phones. The website, indeed, straightforwardly adapts to screens of all seizes

[1] Drupal is open source software maintained and developed by a community of 630,000+ users and developers, avaialble on-line since 2001. It is distributed under

and types. Currently, it contains the sounds of Catalan, distributed according to its main dialects (up to now, Central Catalan, North-Western Catalan, Central Valencian Catalan and Balearic Catalan), and it is intended to include other dialectal varieties, such as North-Eastern Catalan and Alghero Catalan. The sounds are presented through a user-friendly interactive **Phonemic Chart** (containing pop-up windows with explanations about the origin of the symbols, the articulation of the sounds, the meaning and uses of the main diacritics and suprasegmentals, a description of the manner and place of articulation, etc). By clicking on each symbol, a new window is opened: this window contains *a*) a video showing native speakers articulating the sound in different contexts; *b*) an animated diagram; *c*) a spectrogram and oscillogram corresponding to the different words pronounced by the native speakers in the video section; *d*) a link to the corresponding palatograms and dynamic magnetic resonance cross-sections; *e*) an illustrative animated diagram; *f*) a section for comparison of sounds; a *g*) a dynamic articulatory diagram with reference to the articulator labels; *h*) a comprehensive glossary with all the terms related to phonetics and phonology.

1.4.1 User-friendly interactive Phonemic Chart

As said before, the website contains the sounds of Catalan, distributed according to its main dialects (up to now, Central Catalan, North-Western Catalan, Valencian Catalan and Balearic Catalan) and presented through a user-friendly interactive Phonemic Chart. In the **Phonemic Chart** section, indeed, users can find interactive charts for each dialect that contain the **phonetic symbols** corresponding to vowel and consonant sounds. Following the traditional classifications and the IPA phonemic charts, the **consonant** sounds are grouped according to the place of articulation (from anterior to back, from left to right) and manner of articulation (from less sonorant to more sonorant, from top to bottom). Voiceless sounds appear on the left side, while voiced ones appear on the right side (Fig. 2).

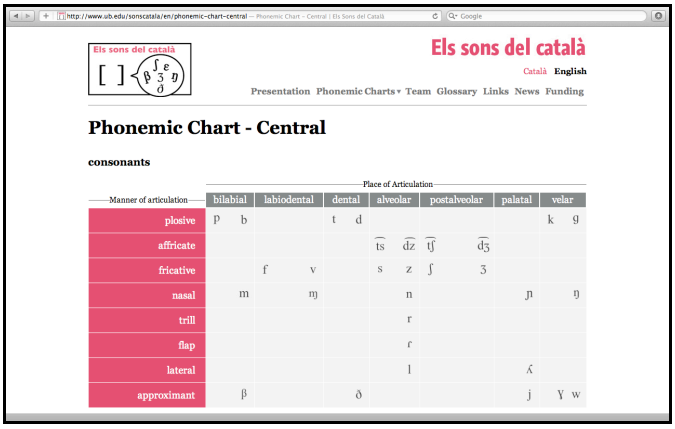

Fig. 2

On the bottom right part, a **vowel chart** can be found that situates each vowel in terms of tongue advancement and elevation. On the bottom left part, the user can find tables describing the main **diacritics** and **suprasegmentals** used in the phonetic transcription of Catalan (Fig. 3).

---

the terms of the GNU General Public License (or "GPL"), which means anyone is free to download it and share it with others. This open development model means that people are constantly working to make sure Drupal is a cutting-edge platform that supports the latest technologies that the Web has to offer. The Drupal project's principles encourage modularity, standards, collaboration, ease-of-use, and more.

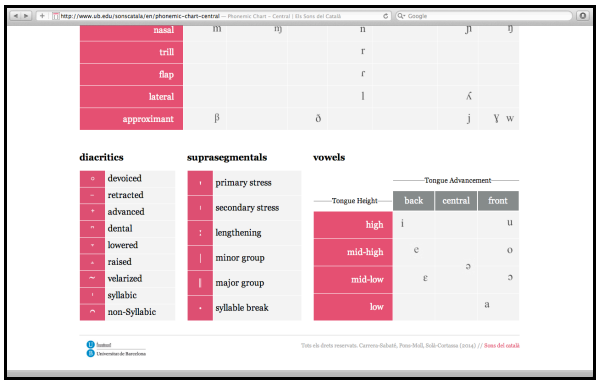

Fig. 3

The **Phonemic Chart** has two levels of surfing: the one displayed when the cursor is *placed* on the symbol and the one that it is displayed when the user *clicks* on the symbol.

When the cursor is **placed** on a **phonetic symbol**, a pop-window appears, that contains a description of that sound's articulatory features as well as the origin of the corresponding phonetic symbol (Fig. 4). This information is especially useful for users because this way they can understand and assimilate better the phonetic symbols that represent the sounds, which in some cases can be quite opaque. When the cursor is **placed** on the different **manners of articulation** or on the different **places of articulation**, a pop-up window that explains which organs are involved in the production of that sound and the manner in which they do it is displayed (see Fig. 5 and Fig. 6). The descriptions and explanations are technical but clear and understandable.

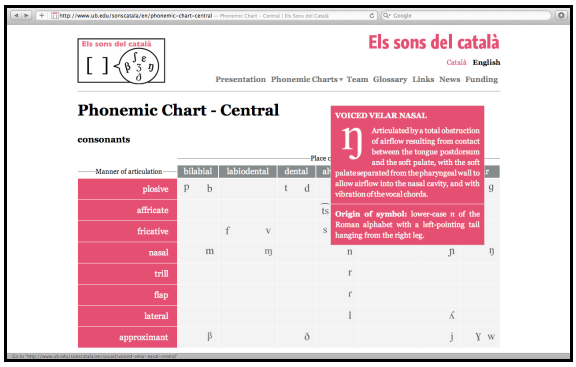

Fig. 4

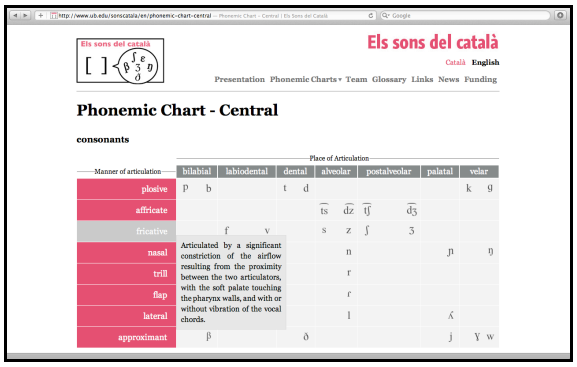

Fig. 5

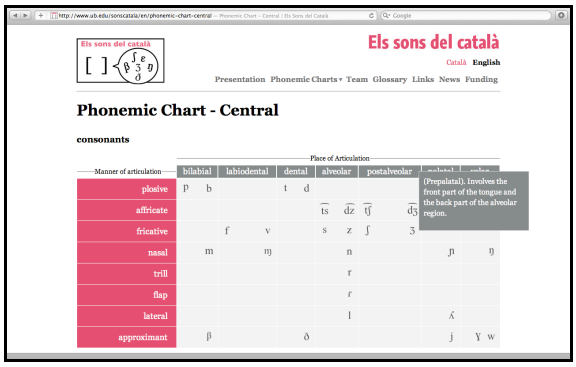

Fig. 6

When the user clicks on a **phonetic symbol**, a plain window appears, that contains three main frames, which correspond to the moments of production and transmission of sounds: *a*) a video frame (1.4.2), *b*) a diagram frame (1.4.3), and *c*) an oscillogram and spectrogram frame (Fig. 7). These main frames, at the same time, are surrounded by some links and additional material (see above).

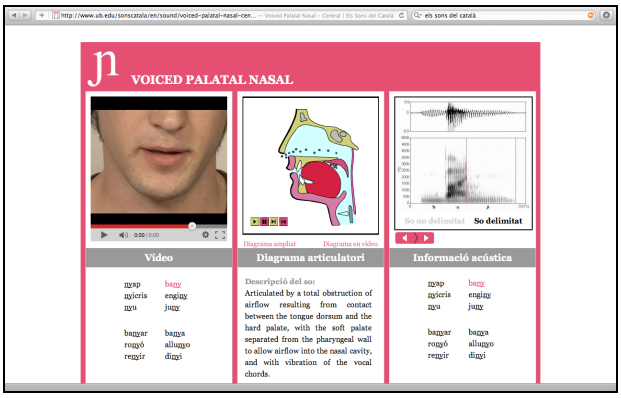

Fig. 7

1.4.2 Information about the sounds (1): videos

The **video** section, placed at the left side, shows different videos where a Catalan native speaker, belonging to a specific dialectal variety, produces each of the sounds in different phonetic contexts (basically surrounded by [i], [u] and [a] or schwa) and structural contexts (whenever possible, word-initially, word-finally and word-medially), so that the facial movement (especially lips and jaws) is visualized, and the sound itself is heard (see Fig. 7 above). This application is enlargeable.

1.4.3 Information about the sounds (2): Dynamic articulatory diagrams

The **diagram** section, placed in the middle frame, contains an **animated diagram** (available in Flash and You Tube), which shows the airflow trajectory, the movement of the articulatory organs involved in the production of that particular sound and the vibration of the vocal folds. These diagrams were carefully designed following the human anatomy. In them, the little balls represent the trajectory of the airflow and vary in color depending on the type of sound: the more obstruent it is, the darker they are; the more sonorant, the clearer they are. The application allows the user to play, pause, forward and backward the movements, and it is also enlargeable, and was designed by Maria Moll (Escola d'Art i Superior de Disseny Pau Gargallo de Badalona).

1.4.4 Information about the sounds (3): Oscillograms and espectrograms

The **oscillogram** and **spectrogram** section, placed on the right side, represent the acoustic information of the corresponding sound, with information about time, frequency and amplitude. This application allows the user to delimitate the sound with two straight red lines, to hear it and it is also enlargeable. The acoustic information has been elaborated by Ana María Fernández and Eugenio Martínez Celdrán (from the Laboratori de Fonètica of the Universitat de Barcelona).

1.4.5 Additional information about the sounds (1): Palatograms and DMRI

Just below the articulatory diagram in the middle there is a link to the section **Palatograms and Dynamic Magnetic Resonance Images (DMRI)**.[2] The former represent the degree of contact (represented in purple) between the tongue and the palate in the articulation of those sounds that involve these two organs, and the latter are a faithful reproduction of the movements of the articulators in the production of sounds: they were obtained by a research group in the Universitat de Girona, in collaboration with the Hospital Universitari Dr. Josep Trueta (Girona) (Fig. 8).

[2] MRI is a medical imaging technique used in radiology to investigate the anatomy and function of the body in both health and disease. MRI scanners use strong magnetic fields and radiowaves to form images of the body. The technique is widely used in hospitals for medical diagnosis, staging of disease and for follow-up without exposure to ionizing radiation.

Fig. 8

1.4.6 Additional information about the sounds (2): Parts of the vocal tract

In the top right part of each of these windows, there is the section **Parts of the vocal tract**, which show the labels that those receive in an interactive way: placing the cursor on the labels in the left the different parts become highlighted and can be easily identified and recognized (Fig. 9). Active articulators are pink in the labels, whereas passive ones are green. The relevant cavities (oral, pharyngeal, and nasal) in the articulation of sounds are also highlighted when the cursor is placed on the respective label.

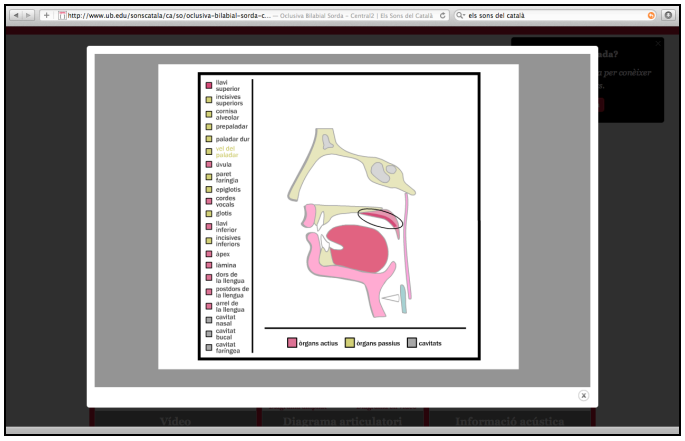

Fig. 9

1.4.7 Additional resources (1): Glossary

As said before, a **Glossary** containing an exhaustive list of terms related to phonetics and phonology and accessible from the main tool bar can be displayed. The Glossary is organized alphabetically, can be consulted according to the initial letter of the term, and has been elaborated following the *Diccionari de Fonètica*, elaborated by Joan Julià, and published by Edicions 62.

1.4.8 Additional resources (2): Comparison of sounds

Finally clicking on the **Comparative sound chart**, placed at the top right part of the main Phonemic chart, the user accedes to a webpage that includes three Flash animated articulatory diagrams by which the user can choose and simultaneously view the articulatory diagrams of three different consonant or vowel sounds in order to compare them.

2 IMPACT ON HIGHER EDUCATION

The impact of the website since its official presentation in 2009 has been quite significant. It appeared in the main Catalan media (including TV3, 324 [Espai Internet], Catalunya Ràdio, Vilaweb, etc.) and it

is referenced in a considerable number of websites (esAdir, Softcatalà, PuntTIC, Edu3.cat). For detailed information about the presence of the website on the media and on Internet itself, visit the URL http://www.ub.edu/sonscatala/en/news). The impact of the website has been also remarkable internationally; this is why the team leaders have been invited in various occasions to present it in the context of international Catalan teaching programs, such as the *lectorats* offered by the Institut Ramon Llull.

In order to know the impact and the benefits of the website on higher education, an inquiry to the Llengua Catalana II students has been carried out during this course 2013-2014. A similar experience was conducted in relation to the first version of the website (see, in this respect, the URL http://ojs.uv.es/index.php/attic/article/view/1680/2099, and also [1]). In what follows, we expose the results of the current inquiry.

2.1 General information about the inquired students

The most representative age group is that which covers students aged between 18 and 20 (54'78%). The second one includes students aged between 20 and 25 (27'27%). Other minority groups are those aged between 30 and 35 (9'09%) and 40 and 45 (9'09%). No elder students are represented in the survey, though few of them enroll in Catalan Philology every year. The amount of students aged between 18 and 20 years is highly connected with the fact that the course is offered at first year. Therefore, 81'82% of the interviewed students is at first year. However 9'09% of them is at second year, and the remaining 9'09% is at third year. Since most students are aged between 18 and 20, it is clear that they are taking their bachelor degree. Among them, it is usual not to have an extra occupation apart from studying. 72'73% of the interviewed students does not work. 27'27% of them has a job. The worker-students are concentrated, mainly, in the age group 20-25 (18'18% over the total). The first language of the students is mostly Catalan (72'73% of them has it as L1). Spanish is the second group (27'27% has it as their first language). All of them, certainly, know both languages: they are bilingual. This question summarizes the situation in Catalan Philology: there is a prevalence of Catalan, although a significant segment of students has Spanish as their L1. The survey does not reflect any other first language, though it is well known that students who do not have Catalan or Spanish as their first language also enroll in Llengua Catalana II. As far as gender is concerned, 54'55% of the students are female and 45'45%, male. This percentage portrays the late years' trend: most degree students are female. It is remarkable that none of the students stated that their mothers have only primary studies. So mothers have either secondary studies (45'45%) or higher studies (54'55%). In contrast, none of the students' fathers has attended university. 20% has primary studies and 80% has secondary studies. As a response to the question "Where do you access 'Els sons del català' website from?", 90'91% of the students answered "from home". Apart from that, 27'27% also access it from the University, and 9'09% visits it from a friend's house. "Els sons del català" is a website which has been developed as a support for lessons and individual study at home. These results, therefore, are up to the mark. The response "from a friend's house" is a remarkable one since it illustrates some student's trend towards group study sessions.

2.2 General remarks on the website

Almost all the students (90'91%) think that "Els sons del català" improves the teaching/learning experience in the context of Llengua Catalana II (see Fig. 10). We can conclude, therefore, that the overall evaluation of the students is clearly favorable. As for the advantages that students relate with the use of the website, 28% answers that *it allows you to access the subject's content at any time*, 32% considered that *it makes the learning of the phonetics easier*, 28% says that *it makes some class explanations clearer* and 12% states that *it allows you to work some aspects in depth*. Thus, we can confirm that students appreciate the usefulness of the website, both as a learning tool for the phonetics-related content of the course and as a support for the home study. The question *Do you think the website can be useful for other subjects? (Not necessarily related to Catalan Philology)* has received a positive response in 90% of cases. Therefore, most students rated "Els sons del català" not only as a study tool for Llengua Catalana II, but also as a support material for practicing other subjects of the Catalan Philology degree or other studies. The question *Would you recommend the use of the website to a classmate?* obtains an affirmative answer in all cases. It is clear, therefore, that students appreciate the utility of the site for the study of some of the content taught in class. Regarding the possibility of recommending the site to people who do not attend Catalan Philology, the 100% say they would.

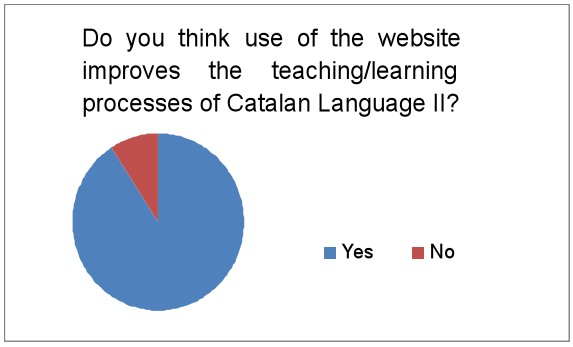

Fig. 10

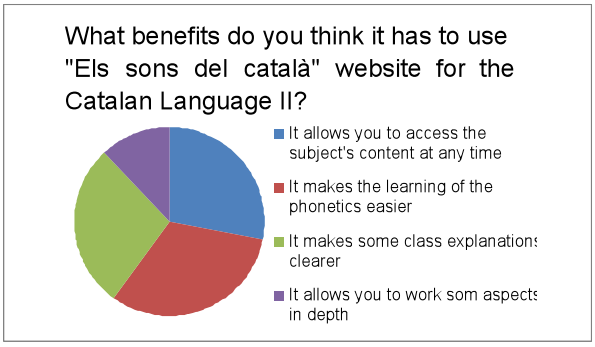

Fig. 11

Concerning the impression that students have of “El sons del català” as an audiovisual website (Fig. 12), 90% considers it to be excellent. The remaining 10% considers it to be positive. As for the ease with which the website can be used, more than a half of the respondents considers it to be *almost always* easy to surf (63’63%), and nobody has marked the option *never* (fig. 13). To the question *Is the audiovisual material dynamic?*, half of the students has answered that the audiovisual material is almost always dynamic and 30% has answered that it is always. The general assessments, therefore, are positive again with some aspects that should be improved.

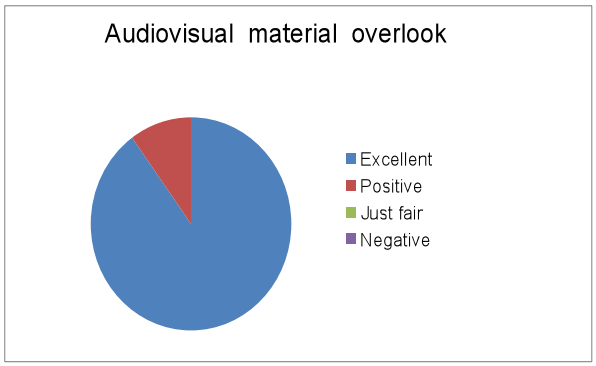

Fig. 12

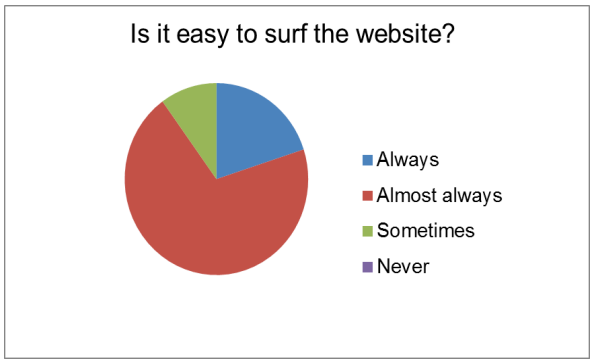

Fig. 13

More than 60% of the students think that it is *sometimes* enjoyable to surf the website, and almost 20% of the students think that it is *always* or *almost always*. When answered *Do you think it is possible to learn while surfing “Els sons del català” website?* (fig. 14) students have given a positive response in 81’82% of the cases. Thus, most students consider that “Els sons del català” is a useful tool for learning.

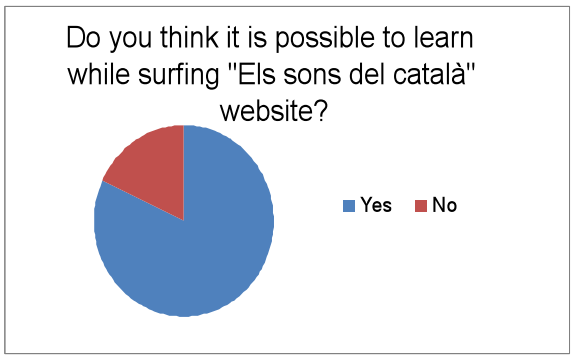

Fig. 14

2.3 Usability, comprehension and learnability of the website contents

Most students (72'73%) have used the website throughout the course. Only a minority group did not (27'27%). Users' main purpose when visiting the webpage is to practice the contents taught in the course. Going into detail of the contents is the second most valued purpose. Students who have not used the page state they did not because it is not compulsory for the course (66,67%) and because the materials are not useful for them (33,33%). The most indicative percentages of this chart may be, however, that no student uses "Els sons del català" as a substitute for the lessons. This fact could suggest that the site makes sense as a complementary tool for the lessons: students make use of it as way to assimilate the subject contents and go into them in depth. 90% of the students think that "Els sons del català" website contains basic topics related to phonetics and phonology seen throughout the lessons, and only 10% say it does not. To the question *Are the contents of the website "Els sons del català" clear enough?* (fig. 15) most of the students answer *almost always* (63,63%) or *always* (18,18%), and only 18,18% of the students answer *sometimes* or *never*.

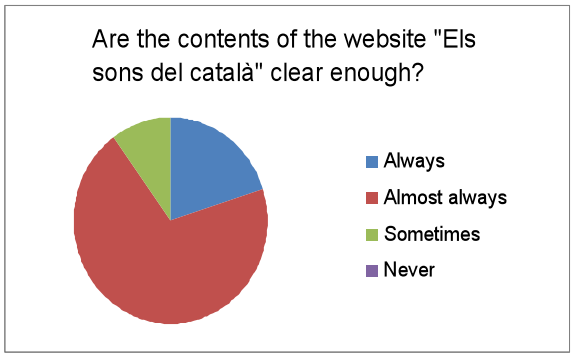

Fig. 15

One of the aims of "Els sons del català" is to be an attractive website to help students improve their phonetics knowledge and to make pleasant its learning process. In this sense, 72'72% of the answers to the survey state that they found it attractive enough (fig. 16). However, 18'18% does not agree. 9'09% does not answer. It seems like the website offers an appropriate organization of the materials. 81'82% endorses this statement. One student does not (9'09%) and another one just didn't answer this question.

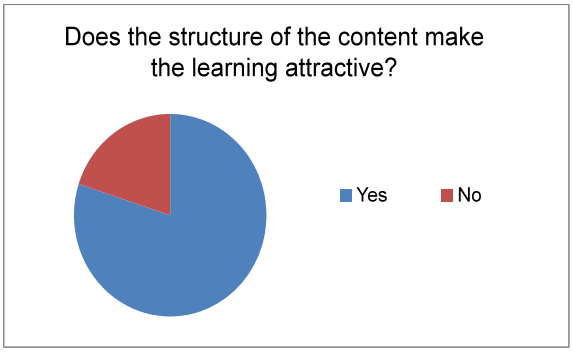

Fig. 16

As a response to the question *Is the depth in which contents are shown suitable for the Llengua Catalana II level?* there is a clear majority answer: the survey reveals that 72'72% of the students think that the standards of the subject Catalan Language II and the depth in which website contents deals with them are similar. 18'18% does not think so and 9,'09% does not answer.

There is a question related to the surfing comprehension. 60% of the polled students state that they did not find any problem. The remaining 40% declare they did. It seems like the website is quite understandable, though some changes should be introduced to improve the surfing comprehension.

The last question (*Do you think there is any improvable aspect?*) is the one that has more varied responses, as it is, maybe, the most complex item. The two most recurring suggestions are to add some extra phonology-related contents (21'05%) and to upload some exercises (21'05%). There is a group of answers (4) which have the same backing (10'53%): to improve the navigation options of the website, to add some extra dialectal-related contents, to upload more examples from the phonemic chart and to improve the pictures. A minority group asks for more videos (5'26%).

3 PERSPECTIVES AND PROSPECTS

Given the results obtained in the survey, the main goal in the following years will be to add a set of exercises so the users can practice its contents in an autonomous way: the exercises will include *a*) practice in sound recognition and discrimination; *b*) practice in phonetic transcription; *c*) practice in sound production identification and comparison through unlabeled articulatory diagrams; *d*) practice in spectrogram recognition and segmentation, and *e*) practice in Catalan speech production. Also considering the results, we will enlarge the dialectal information contained in the website (by adding information relative to other dialects), we will improve its navigability and clarity, and, if the resources allow us to do it, we will extend it with information concerning other Romance languages.

REFERENCES

[1] Cabrera, M. and J. Carrera-Sabaté (2013). Els sons del català: una eina d'aprenentatge autònom?. *@tic. Revista d'innovació educativa.*

[2] Carrera-Sabaté, J. and C. Pons-Moll (2009). Internet Assisted-Phonetics. *The sounds of Catalan. EDULEARN09 Proceedings.*

[3] Carrera-Sabaté, J. (2012). "Els sons del català". Una propuesta para la docencia de la fonética catalana. In: M. Cruz i M. Trenchs (eds.). *Experiencias de innovación docente en la enseñanza universitaria de las Humanidades.* Barcelona: Octaedro, pp. 73-89