

# DYSARTHRIA AND TEACHING SPEAKING SKILLS IN ENGLISH AS A FOREIGN LANGUAGE: A CASE STUDY<sup>1</sup>

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## 1. Introduction

In this article we present a case study carried out with a student with dysarthria in the English language classroom. Dysarthria refers to “a group of speech disorders resulting from disturbances in muscular control” (Darley, Aronson and Brown 1975: 2). We will focus on how to assess students with dysarthria based on diagnostic tests in L1 (first language) and FL (foreign language) that describe the student’s abilities regarding the production of both languages.

As part of a larger project on the assessment of oral skills, our case study has been conducted in order to evaluate ways in which students with dysarthria could be assessed in the English as a Foreign Language classroom. In order to do so, we will first need to define what is understood by “assessment”. Assessment as a process can be defined as:

An ongoing process aimed at understanding and improving student learning. It involves making expectations explicit and public; setting appropriate criteria and high standards for learning quality; systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards, and using the resulting information to document, explain, and improve performance. (Angelo 1995: 7)

Our concern is to find a way in which teachers may deal with a specific diversity type in the higher education classroom. This educational level is in clear

disadvantage as regards research and materials when compared with lower educational levels, especially when compared to the amount of material that may be found for working with school students. In Figure 1 below we illustrate how we envisage speech diversity assessment within a Higher Education functional diversity framework. Each functionally diverse student (i.e. a student with learning difficulties and disabilities) has specific needs that need to be fulfilled in order to achieve their educational goals. In our case, we focus on the skills that are needed for language learning, specifically speaking skills. Even though adequate assessment is essential, it is also important to plan and design any adaptation that is needed in the day-to-day learning experience. Thus, a language teacher with a functionally diverse student will first need to identify which language skill will pose more difficulties for the student and start planning his/her teaching adaptations accordingly. A second step will then be to determine the type of instruction that may be necessary to improve this skill, the environmental adjustments, material and instruction adjustments and the possible ways to elicit responses from the student (both in and out of the classroom in the form of assignments). Here technologies (Almond et al. 2010; Fichten et al. 2009; Nganji and Brayshaw 2014) may play an essential role (e.g. programs that read computer-based texts for people who are blind, a tool that works quicker than having these texts translated into Braille and available for the students).

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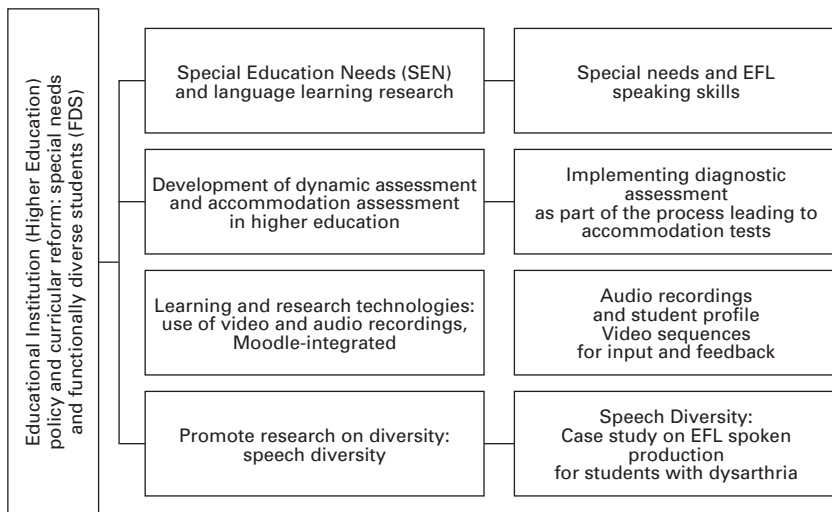


Figure 1. Assessing students with speech diversity in Higher Education.

The following natural step would be deciding the assessment type to use. The three basic assessment types are diagnostic, formative and summative, which typically happen before, during and at the end of a learning phase. Thus, we can say that:

- a) Diagnostic assessment is used to assess student's knowledge and skills prior to instruction. It provides indicators for both the student and teacher to become aware of the student's language proficiency profile and to be able to devise an organized learning plan that suits the student's needs.
- b) Formative assessment is carried out while learning is taking place. It has an interactional nature in the sense that both student and teacher provide feedback to each other during the learning process and adjustments are made according to this information.
- c) Summative assessment is used at the end of a learning phase or to evaluate students according to specific standards. Summative assessment tells us whether a student has reached an acceptable level that is requested to pass a subject or a standardized test.

Although we may employ all or any assessment type, in the case of students with speech disorders or speech diversity, we believe that diagnostic assessment is an essential part of the process because it may lead to a formative assessment with clearly established learning goals. It would give both teacher and student a more detailed and accurate idea of the student's language proficiency and it would also help the teacher to ascertain whether his or her original planning was suitable.

Finally, as suggested in Figure 1, research and sharing of teaching practices are essential if we are to develop effective educational tools that are now missing in higher education and that could be used by teachers following a common methodology based on research results.

## **2. Learning Difficulties, Learning Disabilities, Physical Disabilities, and Functional Diversity**

To our knowledge, most Spanish University teachers do not have specific guidelines with detailed information to deal with functionally diverse students, other than an explanation of the problem and general recommendations in the form of general guidelines. But following this kind of specifications does not help the students achieve any specific goals nor does it motivate them or their teachers to improve their skills, in our case spoken skills both in their own language and in a foreign language. What is lacking is a *protocol* that allows students and teachers to *define the activities or tasks that could be problematic* and state why these activities are problematic, and *determine the specific solutions* (or diverse paths) that may be followed. To this end, a diagnosis of the difficulties students may face due to their condition and an evaluation of the

kinds of problems that they may work with are vital. In this sense, both teacher and learner have to become aware of the possible difficulties, they need to set a learning plan and they need to set a goal they want to achieve.

Let us give a specific example. If we ask our students to give an oral presentation, we may —among other assessment criteria— use a rubric to assess their performance. Below, we exemplify speech-related and non-verbal criteria included in rubric samples for oral presentations that show items where physical speech diversity may interfere:

<b>Voice: clarity, pace, fluency</b>	Presenter occasionally spoke clearly and at a good pace.	Presenter usually spoke clearly to ensure audience comprehension. Delivery was usually fluent.	Presenter spoke clearly and at a good pace to ensure audience comprehension. Delivery was fluent and expressive.
<b>Pronunciation</b>	Pronunciation occasionally correct, but often hesitant and inaccurate.	Pronunciation and intonation is usually correct.	Pronunciation and intonation is correct and confident.

Table 1. Oral presentation rubric Sample 1 ([www.education.vic.gov.au/languagesonline](http://www.education.vic.gov.au/languagesonline)) 06/05/14.

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<b>Nonverbal Skills</b>	<b>4 – Exceptional</b>	<b>3 – Admirable</b>	<b>2 – Acceptable</b>	<b>1 – Poor</b>
Eye Contact	Holds attention of entire audience with the use of direct eye contact, seldom looking at notes or slides.	Consistent use of direct eye contact with audience, but still returns to notes.	Displayed minimal eye contact with audience, while reading mostly from notes.	No eye contact with audience, as entire report is read from note.
Body Language	Movements seem fluid and help the audience visualize.	Made movements or gestures that enhance articulation.	Very little movement or descriptive gestures.	No movement or descriptive gestures.
[...]	[...]	[...]	[...]	[...]
<b>Verbal Skills</b>	<b>4 – Exceptional</b>	<b>3 – Admirable</b>	<b>2 – Acceptable</b>	<b>1 – Poor</b>
Speaking Skills	Uses a clear voice and speaks at a good pace so audience members can hear presentation. Does not read off slides.	Presenter's voice is clear. The pace is a little slow or fast at times. Most audience members can hear presentation.	Presenter's voice is low. The pace is much too rapid/slow. Audience members have difficulty hearing presentation.	Presenter mumbles, talks very fast, and speaks too quietly for a majority of students to hear & understand.

Table 2. Oral presentation Sample 2 ([http://www.uwplatt.edu/system/files/UW-Mad%20Oral\\_presentation\\_rubric.pdf](http://www.uwplatt.edu/system/files/UW-Mad%20Oral_presentation_rubric.pdf)) 06/05/14.

If a teacher uses the above or similar criteria to assess students and has to assess a student with dysarthria (or other speech difficulties), these criteria need to be contrasted and valued in relation to the student's abilities in their mother tongue. This is so because speech disorders may influence, for instance, aspects of the presentation such as pace, fluency and intonation. The foreign language teacher needs to be aware of the specific difficulties of the student, since they may vary among students with dysarthria. This awareness should lead us to effectively implement accommodations or modifications in the syllabus and testing methods when necessary. In order to find out the student's abilities, a diagnostic test is needed. These adaptations in the diagnostic phase may carry on during formative assessment and will enable us to develop an informed design of a final or summative adapted assessment. It is these accommodations or adaptations that are difficult to carry out unless clear criteria have been previously designed and practiced.

In the educational environment, studies on learning disabilities<sup>2</sup> (Fuchs and Fuchs 1998; Gunter, Denny and Venn 2000) point out that few modifications are carried out in the curriculum for students with learning disabilities (particularly at post-secondary level, Newman and Madaus 2015) and when they do occur, they are mainly based on acknowledging the degree to which the demands required for a specific subject are lowered. Newman and Madaus (2015) also point out differences and similarities across states in the US, thus identifying considerable variability across states in the same country. Common modifications relate to the amount of time allowed to perform specific tasks, changes in the student-teacher ratio (1:1) and providing some alternate curriculum or assessment formats (Sireci, Scarpati and Li 2005). Some more recent studies, however, present more in-depth needs analysis for functionally diverse students and implementation criteria (Wexler and Luethi-Garrecht 2015). Likewise, materials have been designed for students with a particular specific difficulty (see, for instance, Kormos and Kontra 2008; Kormos and Smith 2012; Nijakowska et al. 2013).

Among the possible modifications that are implemented for functionally diverse students we can speak of test accommodation (Sireci et al. 2005). Test accommodation is an educational practice that consists in the modification of a standardized test. These changes are made in order to adjust the tests to the various needs of functionally diverse students (sensorial, physical or cognitive functionally diverse students). But test accommodation is not very useful unless students are prepared for such tests and teachers know how to train their learners to get the best possible results. Likewise, accommodation tests should be designed not only for standard tests but also for those subjects the functionally diverse students may take as part of their curricula. It is also important to note that validity criteria and accessibility of tests may also be questioned when accommodation takes place (Hansen et al. 2005).

In order to improve test accommodation practices, Fuchs and Fuchs (2001) propose what they call Dynamic Assessment of Test Accommodations or DATA, which helps teachers to obtain a better judgment of the validity of their accommodation, allowing them to compare learning achievements between functionally diverse students and those with no functional diversity. To this aim, short texts are administered under varying conditions (for instance, standard and extended timing) and are mostly group administered. The resulting database is used to determine accommodation validity. These accommodation practices, however, are complex in nature and pose many questions, as these authors later point out:

In sum, the research base examining differential effects of test accommodations is lean and fails to provide a basis for conclusions about the validity of testing accommodations for the group of students with LD [learning disabilities]. Of course, even if we could point to a well-established literature that documented differential effects for students with LD, findings would represent average performances. And because students with LD demonstrate a variety of underlying deficits, there is tremendous heterogeneity in the population. This means that many students with LD do not conform to “average” findings in the research literature. In fact, although some accommodations may ultimately reveal comparable “average” effects, some students with LD undoubtedly will profit from those very accommodations substantially more than do nondisabled students. For this reason, individual diagnosis of accommodations is necessary for students with LD. (Fuchs and Fuchs 2001: 178)

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Types of accommodation usually include: timing (increased), settings (where test takes place), presentation (how instruction is given) and type of response allowed or available (written, spoken, online etc.). But even if these practices are needed and implemented, they are too wide and not enough, because of individual differences among students with special needs that may be marked by their sociocultural environment, learning styles and personal motivation. As Moriña, Cortés and Melero (2014:45), talking about functionally diverse students in Spanish Higher Education (HE), rightly point out:

for truly inclusive education to become a reality, a shared learning space and timetable are not enough; new approaches to learning and teaching (curriculum design and assessment) are also required. Reform may rouse resistance rooted in the notion that change will have a negative impact on curriculum quality, or that excellence will not be achieved.

Opinion and personal experience (Inahara 2013) should also be reflected in the terminology used to refer to students. Thus, the *Independent Living* approach to “disability” uses the term “functional diversity”, which corresponds to a reality in

which a person functions in a different or diverse way from the majority of the members of a society. In the educational environment this social model is the one that fits our approach to language teaching. Teachers need to know how students approach a task and be able to provide feedback according to the students' diverse approaches to language learning. Both institutions and teachers should also approach these students using those terms that better adjust how we think of our students. Thus, the words "disability" and "disorder" refer to the "lack of (dis-)" something, focusing on the medical perspective. The term "diversity" refers to different types of students and how we deal with individuals in the classroom. We will henceforth use the terms "functional diversity" and "speech diversity" in the rest of this article.

Our case study focuses on the difficulties a student with dysarthria may face when confronted with the task of giving an oral presentation in English. It is important therefore to define dysarthria in order to understand how it may affect oral production in an English as a Foreign Language subject. Dysarthria is defined as:

a collective group of neurologic speech disorders that reflect abnormalities in the strength, speed, range, steadiness, tone, or accuracy of movements required for the breathing, phonatory, resonatory, articulatory or prosodic aspects of speech production. The responsible neuropathologic disturbances of control or execution are due to one or more sensorimotor abnormalities, which most often include weakness, spasticity, incoordination, involuntary movements, or excessive, reduced or variable muscle tone. (Duffy 2013: 4)

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When translated to the English as a Foreign Language (EFL) classroom, this means that the student will have difficulties with the spoken part of the subject. In foreign language learning, attention is paid to the four basic skills of reading, listening, speaking and writing. In the case of dysarthria, speaking skills will be complicated due to the speaker's characteristics. Depending on the symptoms a speaker may present, the difficulties can be as varied as a slow speech, changes in vocal quality, limited tongue, lip and jaw movement, hoarseness or slurred speech. Students may also have difficulties related to the ability to physically write due to muscular problems. In the present study we want to focus on a specific task that is meant to be assessed in an EFL subject and we will solely discuss spoken skills. More specifically, we are concerned with spoken skills needed for oral presentations. Since oral presentations are also a common university practice, we believe that some of the findings in this article will be relevant to achieve a better performance for oral presentations in other subjects.

When asked to give an oral presentation, assessment criteria in the EFL classroom may include some or all of the concepts summarized in Figure 2:





which may pose a problem to our student, (2) which features may be achieved, (3) which aspects of communication (including gestures) may be improved and how.

This study is innovative because no such attempt exists for dealing with dysarthria in the language classroom and it opens the door to better assess students with speech diversity and to find ways to determine whether these students should or should not be asked to perform spoken tests. Thus, the tests developed for the present study provide relevant feedback for the oral presentation criteria mentioned above that may be affected by speech difficulties in students with dysarthria, namely: intonation, pronunciation, body language and fluency.

### **3. Method**

#### **3.1. Subject**

This is a case study in which a subject with dysarthria participates. The subject is a 33 year old postgraduate student and holds a Bachelor's Degree in Humanities. Our student has a cerebral palsy with tetraparesis leading to reduced mobility and speech diversity (dysarthria).

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#### **3.2. Settings and Equipment**

The subject was asked to participate in two interviews and a number of language tests (described below). She was recorded for both interviews and tests. All audio and video recordings were carried out in a computer room at the university the student attends. A *Canon HD Camcorder LEGRIA mini* was used for all the interviews and tests. All the tasks were simultaneously recorded by the computers using an external microphone. The candidate was video recorded because the readings and the interviews to the candidate could possibly reveal the subject's ability to compensate speech difficulties with gestures and intonation.

#### **3.3. Procedure**

As commented above, the aim of this study is to design a protocol that could be used in order to assess a student with speech diversity and serve as a model for other students with similar speech diversity characteristics. It should be born in mind that dysarthrias as well as any other speech problems are complex in nature and the way they affect speech production in both first and foreign language may vary from one individual to another. In order to work with a student with dysarthria, the steps explained below are a proposal for a diagnostic profiling that may aid in developing an organized learning plan according to the student's needs. This diagnostic profiling would promote student's oral skill proficiency awareness

in order to devise a progress plan in the foreign language subject. Several tests were performed as part of the diagnostic assessment. The tasks are meant to test speaking skills abilities and oral proficiency and range from orthoepic competence (read aloud words, phrases and text) to more complex tasks like picture description and interview. The steps followed are outlined below:

- 1) Administration of a placement test
- 2) Online questionnaire to get information about the subject's profile
- 3) Opening interview in Spanish
- 4) Tests in Spanish
  - 4.1. Test list of words in Spanish
  - 4.2. Test phrases in Spanish
  - 4.3. Read text in Spanish
  - 4.4. Talking about a picture in Spanish
- 5) Tests in English
  - 5.1. Test list of words in English without audio file help
  - 5.2. Test list of words in English with audio file help
  - 5.3. Test phrases in English
  - 5.4. Read text in English
  - 5.5. Talking about a picture in English
- 6) Closing interview in English with the subject discussing a journey to an English speaking country.

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#### 4. Results

Test results are analyzed and compared in both languages, Spanish and English, explaining where the subject's difficulties lie. After the analysis, recommendations for the classroom are given based on the student's performance in the tests. For all the tests that follow, the researcher introduced and explained each one before the student started to carry them out. The word reading tests and the reading phrases tests were interpreted by four Spanish and four English language native speakers. It should be pointed out that this could be considered a small number of listeners if we aim at analyzing speaker intelligibility from a medical point of view. But the aim of this article is to provide tools that may help teachers interpret students' abilities so as to design a learning plan. Working with bigger numbers would be unfeasible for the majority of teachers. If test results provide us with sufficient data to understand and interpret our students' abilities, then they might be considered useful tools to work with.

#### 4.1. Placement Test

In order to determine the student's English language proficiency level according to the Common European Framework for languages, she was administered a quick placement test<sup>3</sup>. This test was implemented in *Moodle* to facilitate the task for the test taker. The test consists of 60 questions on the use of English and allows test givers to get a quick reference level for the students they work with. Our student obtained 26/60 corresponding to level A2.

#### 4.2. Online Profile Questionnaire

After the placement test, the subject completed a questionnaire that was used as a reference before the first interview was conducted. The aim of this questionnaire was to obtain a basic student's profile and help the researcher design interview questions. Question choice was meant to yield a more spontaneous performance on the part of the speaker during our first interview with her. It should be noted that the use of the placement test with participants in this study is merely a starting point to identify overall language level. Participants participated in oral tests later on in the study.

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### 5. Results

#### 5.1. *Results for the Tests in Spanish*

##### 5.1.1. Interview in Spanish

The researcher conducted an informal interview with the student before the tests were carried out. The aim of both the opening and closing interviews was to get a sample of more or less spontaneous speech production. Only the interviews and the task in which the student describes a picture allow for fluency and body language observations.

At the beginning of the recording sessions the subject was interviewed and was asked about her learning experience and how she thinks her functional diversity is perceived by classmates and teachers within educational settings. There was no difficulty on the part of the student to make herself understood. The most interesting data recorded in the interview were those related to non-verbal communication. The camera recording of that interview allowed us to observe and annotate gestures used by the student, some of which are shown in the images below. The captions under the images indicate what the subject was saying in her L1 while using the hand gestures:



a) "Other kids overprotect them"



c) "Get adapted to" (hand twist)



b) "If we go after her"



d) "There's no integration"

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Figure 3. Sequence for gestures in the interview in Spanish.

These above are some samples of the many gestures the subject performed while speaking in her own mother tongue. Some face gestures were also employed mainly to express emphasis, but are not reproduced to keep our subject anonymous. Due to her cerebral palsy, there are facial muscle restricted movements and face gestures are more difficult to perform, but this was not an impediment for our subject since she communicated through face gestures to the extent of her abilities. Hand gestures proved to be used to their full potential, something that does not always happen with all students/speakers. This means that this particular subject is good at communicating through gestures, at backing her verbal communication with her non-verbal communication resources.

#### 5.1.2. List of Words in Spanish

The Spanish test was considered a tool to determine both the student's areas of difficulty when saying a word and those in which the student is able to reach proficiency. This test consisted of a list of 50 frequent words in Spanish that the subject had to read out loud. This list was designed in a way that included all possible phonemes in Spanish. Each phoneme is repeated twice in different word positions. Words in which the same phoneme appeared in initial and final position

were also included. For instance, /k/ in the words “café” and “chico”, with /k/ in initial and final position, respectively, were included in the list of words to be read. Where applicable, this was also done in the English counterpart test (reading a list of words in English), for example: “cold”, “chocolate” and “quickly”, the last word having the phoneme twice in the same word. The list of words in Spanish was read by the subject and the recordings were interpreted and transcribed by four listeners whose mother tongue was also Spanish.

Regarding the word reading test, average test scores of listeners for the word reading test in Spanish was 90% (SD ±9.52). These scores indicate high word intelligibility as well as a high listener agreement. It can be observed that the group of phonemes that is best performed is that of vowel phonemes with just one error detected for one vowel phoneme. The group of diphthongs shows no error production.

Consonants show a greater range of problems, listed below:

- 1) Vibrant: this is the group where more substitution and omission errors are detected, since pronunciation of /r/ requires a greater articulatory precision.
  - a) Alveolar trill /r/ substitution errors are found for this phoneme, which is changed to plosive bilabial sound /b/ or by voiced velar plosive /g/ when the phoneme appears in initial position both in the first and the second syllable.
  - b) Alveolar flap /r/ (/ɾ/) is sometimes omitted and replaced by alveolar lateral approximant /l/ when the phoneme appears in final position both in the first and the second syllable
- 2) Plosives: some substitution errors are observed.
  - a) plosive bilabial sound /b/ is changed to nasal bilabial /m/
  - b) voiceless plosive:
    - bilabial /p/ is changed to nasal bilabial /m/
    - dental /t/ is changed to voiced alveolar plosive /d/
- 3) Voiceless alveolar: some omission errors are found. Sibilant alveolar /s/ is omitted in the first syllable (gastar/galtar) and in final word position, sometimes leading to another word with similar letters and sounds (martes/madre)
- 4) Affricate. Voiceless postalveolar affricate /tʃ/ is changed to voiceless velar plosive /k/
- 5) Nasal. Palatal /ɲ/ is changed to nasal alveolar /n/ and diphthong (nio)
- 6) Consonant clusters: Substitution and omission errors are found when the consonant cluster is formed by a plosive phoneme (/t/, /g/) and a trill phoneme /r/.

To sum up, it can be said that the vowel phoneme group presents no errors. Difficulties are observed mainly in the simple and compound trill phoneme in their different positions within a word. Plosive consonant phonemes show substitution errors in which these consonants are replaced by phonemes with a different articulation point. Consonants with a lower error frequency are fricatives (with some omission errors), affricates and nasals.

### 5.1.3. Phrases in Spanish

Twenty phrases in Spanish were recorded and then transcribed by four different listeners. Each phrase had one recording unit and they were thus interpreted as a whole unit. The number of phrases that were not understood by one or more of the listeners was significantly lower in comparison to those of the word reading test. The average percentage of phrases correctly identified by the listeners was 95% (SD± 4.08), indicating a high intelligibility of phrases in Spanish and a small variation among listeners.

In this task only a couple of phrases created comprehension problems. This is due to problems in pronouncing final /r/, which is omitted in “por favor” (*po favor* / please), using an aiding vowel in “pues claro”, because of the difficulties to pronounce initial /k/ (*pues oclaro* / (yes), of course). There are no major intonation problems causing unintelligibility for the list of phrases. These are all short sentences but we chose a number of sentences that demanded intonation (questions, exclamative phrases, pauses for commas, etc.) and the subject showed no problem in those phrases for the Spanish test.

### 5.1.4. Text Reading in Spanish

Following the phrase reading tests, a dialogue<sup>4</sup> was presented to our student and she was requested to read it trying to interpret the role of the two people in the dialogue. The aim of this test is similar to the previous one (isolated phrase reading), but in the case of the text, there is more context, and therefore the subject might try to produce utterances according to the situation she was asked to perform. This may provide the reader more information that lets her consider possible intonation options. In the text reading test, the subject was asked to read a dialogue between two persons. The sentences in the dialogue were short (1 to 14 words). The original text was written in English and it was translated into Spanish for this task. Both language versions are comparable in terms of vocabulary, phrase length and intonation patterns. Conversational intonation posed no important problem for the speaker in the Spanish dialogue. Intonation was more demanding and tiresome than phrase reading, but there were no comprehension problems reported by the Spanish listeners other than one word that was difficult to understand due to difficulty with

the “r” sound that was not uttered, thus resulting in long /ce/ (terremoto (Sp)/ earthquake (En)), though it could be understood because of the context.

### 5.1.5. Talking about a Picture in Spanish

In this test, the subject was asked to work with a picture and try to describe what she could see (healthy food and fast food) and what she thought about the two types of food. This task was more demanding than word, phrase and text reading. As opposed to the interview in Spanish, the only gesture used was face expressions (laughter) to evaluate her attitude towards fast food (positive, in this case the student laughs because she is aware that liking fast food is not supposed to be the recommended answer).

### 5.2. Results for the Tests in English

The same procedure followed with the subject’s mother tongue (Spanish) was used for the tests in English. Taking the English tests after the Spanish ones allowed the student a better comprehension of the task when dealing with the foreign language, thus reducing anxiety.



Figure 4. Time sequence for gestures for the interview in English.

### 5.2.1. Interview in English

The final interview was a series of comments and questions on the student's experience when she travelled to an English speaking country. Gesture usage significantly differed from that of the interview in Spanish. Figure 4 above shows eight pictures reflecting hand gestures along the interview. As can be seen from the images, the first half of the interview yields no gestures due to the fact that the subject is using a foreign language and it takes her a long time to start using spontaneous gestures. It is not until minute 04:58 that gestures start to appear, the first one while saying that a place she visited "was very, very cold", the second one indicating a flight transfer from one city to another, minute 08:11 drawing a circle with the hand to explain the idea of travelling around and finally a drinking gesture while saying "and drink beer".

When compared to the gestures in English (contrast Figures 3 and 4), it should be pointed out that gestures in Spanish are not only iconic (closely related to the semantic content) but also metaphoric (representing abstract concepts such as *integration, adaptation, overprotection*), thus indicating some kind of correlation between language proficiency and use of complex gestures.

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Regarding pronunciation, there were a few mispronounced words that initially complicated comprehension, but they were finally understood with the speaker's rephrasing when the listener showed problems in comprehension. In the case of conversational tasks, both the speaker and the listener have the opportunity to reformulate their speech. This does not happen with the reading tests and it implies questions from the listeners in the case of oral presentations. Task choice is thus very important in the assessment of oral skills for students with speech diversity.

### 5.2.2. Lists of Words in English

Two word reading tests were carried out in English. The first one consisted of a list of 65 words and no input was given regarding their pronunciation. The second test included another 65 words the student was presented with that had to be read and recorded after listening to each word individually in the *Cambridge English Pronouncing Dictionary CD-Rom*. Words were chosen from the keywords of the Oxford 3000™ (a list of important and useful words that should be given priority in vocabulary study). The design of the two lists of English words considered the following criteria:

- 1) Word frequency and/or usefulness.
- 2) Word difficulty, bearing in mind the word in English may influence whether the subject pronounces it correctly, no matter whether speech diversity may interfere or not.



- 3) The fact that student proficiency or lack of it could affect pronunciation.
- 4) Designing two word reading tests, one in which the student is given no instruction on how the words are pronounced, and another one in which the student models the words after listening to them in the *Cambridge Pronouncing Dictionary* (CD version).

Providing audio input in one list and no input for the other would enable us to infer whether the subject's mispronounced words in cases where the same sound appears were due to speech diversity or to her (un)familiarity with those words.

In order to design a more reliable test, we first tested the whole list (130 words) with two groups of students. Twenty-four students with no speech difficulties were selected after performing the same placement test as our subject. Only those who had the same score in that test as our subject were recorded. Our premise was that students would be more liable to mispronounce, for instance, even basic words like "cheese", since they seldom know or remember that there is a long /i:/ in that word or that the sound /ɜ:/ is contained in "first". Students were divided into two groups: Group A was asked to read and record the whole list without any previous instruction. Group B was instructed to read and record the whole list after listening to each word in the *Cambridge Pronouncing Dictionary* (i.e. reading and immediately recording each word after listening to it).

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This was the way to ascertain whether students had mispronounced the words due to lack of knowledge of the word or inability to pronounce specific sounds or words. The results of the tests determined our inclusion in one list or the other (with or without the help of the pronunciation dictionary) of the total words selected for this study.

The researcher played and paused each word in a computer with headphones that the subject had on while performing the task and the performance was recorded in video and audio format. The recordings were listened to by four different native speakers of the English language<sup>5</sup>. Word intelligibility was counted for each listener, thus counting understood and misunderstood words percentages.

#### 5.2.2.1. List of Words in English without Dictionary Instruction

The list of words without dictionary input included 65 words. The percentage of words that were correctly identified by the listeners was calculated. The intelligibility analysis in the four listeners (57.7%, 28.8%, 63.3% and 45.6%), with an average percentage of 48.9% (SD± 15.35), indicates moderate to low intelligibility problems resulting in slightly below average speech understanding of words in English. It should be pointed out that one of the listeners obtained a very low score when compared to the other three listeners. This fact is particularly important when dealing with students with dysarthria, since it reminds us that listener ability

and listener training are essential issues for educational institutions that want to promote good practices among their teachers. It is the responsibility of both speaker and listener to develop strategies in order to promote mutual understanding. The person with no speech diversity should be as cooperative in the interaction as the person with speech diversity. Thus, the listener's side should not be forgotten: communicative efforts should not be placed on the part of the speaker alone.

#### 5.2.2.2. List of Words in English with Dictionary Instruction

The list of words with dictionary instruction input included 65 words. The percentage of words that were correctly identified by the listeners was calculated. The intelligibility analysis for these words resulted in an average percentage of 50.38% (SD  $\pm 7.67$ ). This score indicates moderate intelligibility problems of words in English. The interesting fact about the second test in which audio input was given, is that the listener who had more problems to understand the previous task (no dictionary use) is now able to understand a higher percentage of words (from 28.8% in the test with no input to 44.61% in the test with audio input).

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Although there is not a big difference in overall results between the word reading task with and without input (dictionary audios for word pronunciation), these results indicate that there is a space for improvement when relevant input is provided.

#### 5.2.3. Test Phrases in English

When comparing the English tests, it becomes clear that while the word tests reflect pronunciation problems, the phrase tests are related to comprehension problems, that is, being able to understand the phrase as a whole as a conveyor of an easy message. But in the case of phrases there are two possible reactions on the part of the listener, or two ways to interpret the message. The listener may misunderstand one word in the phrase but still transcribe the rest without trying to make sense of it (*I work very hard*  $\rightarrow$  transcribed as  $\rightarrow$  *I walk very hard*), transcribing the phrase with one misunderstood word even if it does not seem to make sense. But the listener may also try to make the utterance fit into a phrase that makes more sense or that is a more common expression (*I work very hard*  $\rightarrow$  transcribed as  $\rightarrow$  *I was very hot*). In the case of our experiment, the second option (*I was very hot*) would mean a total misunderstanding of the phrase. In a real communicative situation this may lead to misunderstanding in cases in which the listener is not aware of the context or has no ability to fit the phrase into a particular context or situation. This type of listener, however, may be more willing to communicate or understand what is being said and will perhaps prove to be a

better listener because he/she is trying to make sense. This will probably disclose a listener who is more prone to co-construct meaning with the speaker.

This test included 20 short phrases. Each phrase was counted as a unit and there was a high average percentage of understood phrases (80%, SD  $\pm$ 10.80). There is thus a high phrase intelligibility which may indicate that word modulation in phrases could possibly aid comprehension, and also that the co-text in which the words appear aids overall comprehension of the phrase.

#### 5.2.4. Text Reading in English

The subject read the original English text (the same text that was translated in 5.1.4. for the Spanish task). Before reading it aloud, she was given a couple of minutes to read it to herself. The student made full use of her intonation abilities in this task, which enhanced comprehension. Only the mispronunciation of one word (*earthquake*) was reported. This is a difficult word for speakers with dysarthria due to the long vowel, diphthong, and two plosive consonants all in the same word. It is also a difficult word for most Spanish EFL students.

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#### 5.2.5. Talking about a Picture in English

The student used the same picture as in the Spanish task. Compared to previous tests, this was the task in which comprehension proved to be more challenging. The student was requested to talk about the picture<sup>6</sup> in English and try to say as much as possible; she was told to say any idea it may suggest or bring to mind. Even though the student was not given any time limit in order not to put any pressure on her, the type of test (describing a picture) cannot go beyond three minutes and what goes beyond that time would not come out naturally for the student considering she had an A2 level in the pre-test. The usual timing in this spoken test type ranges from 1 to 4 minutes in different institutions and language services. The student simply attempted to explain what she saw and she was not given any extra time. Several difficulties came out in this task. The most obvious one was language level; since the student could not find the words to explain her ideas, it was difficult to follow her explanations. The scarce vocabulary that came to her mind was also mispronounced, thus making it even more difficult to follow her. Finally, the topic did not seem to motivate her too much for a speaking task. Bearing in mind that she did not have as many problems in the final interview and in the text reading test, it seems that difficulties in this test are more related to a language level problem than to a speech problem. No gestures or other non-verbal communication were shown in this task on the part of the student.

## 6. Interpretation of Main Findings and Implications

We will first explain the findings regarding the comparison of Spanish and English difficulties. Then, we will analyze the differences between the two English language word reading tests: the one using dictionary and the one without any dictionary input.

As can be seen in table 3, this particular speaker has few difficulties with her Spanish vowels while the pronunciation of English vowels and diphthongs pose a serious challenge. Plosive, vibrant and affricate phonemes are balanced in both languages in terms of difficulty, indicating direct relationship with dysarthria. Fricatives and consonant clusters are identified as problematic foreign language phonemes.

Spanish	English
<b>Vowels</b>	
/a/ → /o/ Campo → combo (central → back)	/ɜ:/ first → fast , past /ɜ:/ → /ɑ:/ Central mid low /ɜ:/ to central back low /ɑ:/ Prefer → prepare /-'fɜ:ɹ/, /-'pɛər/
	/ʊ/ → /u:/ "full" is pronounced "fool" (Spanish learner of English common mistake) from central-back to back
	/ʌ/ difficulties with this vowel /ʌ/ Run → /ɒ/, /æ/ wand, bun /ʌ/ Must → vowel is pronounced too long and understood as long vowel /ɑ:/, /æ/, /o:/ /ʌ/ Love → left : /ʌ/ → /e/
	/e/ Second → thicken From mid to high vowel Initial /se/ understood as /θi/
	<b>Difficult word: horrible</b> Vowels are changed by diphthong au: ho / kɑu; r-i/daʊ
	<b>Aiding vowel:</b> school → sukul /u/ placed between /s/ and /k/ due to difficulty in pronunciation in <i>school</i> (speaker says "sukul")

<i>Spanish</i>	<i>English</i>
<b>Diphthongs</b>	
	<p>/əʊ/ Difficulty with diphthong. Changed to other diphthong or vowels                      /əʊ/ toast → turn, flu, turist                      /əʊ/ Go (down) → count/come/get/run                      /əʊ/ vs. /au/, /ɪ/, /e/                      Central to front vowel, plosive /g/ complicates pronunciation of the word                      /əʊ/ → /ɒ/                      Outside → ontsj                      diphthongs not pronounced, initial position makes diphthong even more difficult, also diphthong followed by “ts” and a second diphthong /ai/</p>
	<p>/ei/ Fail → fall, full                      Diphthong changed to long vowel or back vowel                      /ei/ → / o:/, /ʊ/</p>
<b>Consonant phonemes</b>	
<b>Plosives</b>	
<p>/g/ → /s/ plosive → fricative                      1st consonant, 1st syllable                      /s/ is more salient when pronouncing word and subject uses it to initiate word                      Gastar → saltar                      /p/ → /b/ Voiceless/voiced bilabial substitution                      Campo → combo</p>	<p>/b/ → /p/ Voiced- voiceless                      Better → pita                      /t/ → /d/Voiceless-voiced                      Talking → dokey                      /t/ → /tʃ/                      Plosive → voiceless palate alveolar affricate                      Meet → mich                      Dirty → delf cheese; delchieve; delcheese</p>
<b>Vibrants</b>	
<p>/r/ → Ø                      Ruido → uideo; reina → eina; torre → toe                      Omits /r/ in 1<sup>st</sup> and 2<sup>nd</sup> syllable                      /r/ → /v/                      Burro → buvo                      Substitutes vibrant /r/ for /v/ in 2<sup>nd</sup> syllable                      /r/ → /l/, /d/                      when /r/ appears in CVC position                      Martes → maltes                      Barco → balco                      Martes → madre</p>	<p><b>Initial</b> /r/ → /b/, /w/, /br/                      Run → bun, wand                      Rest → best, brest                      Red → bread  <b>Final r</b> → ər/ə, reduction                      Danger → ninja</p>

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Spanish	English
<b>Consonant phonemes</b>	
<b>Nasals</b>	
/ɲ/ → /ia/ Voiced palatal nasal → alveolar nasal and diphthong Leña → lenia	
<b>Fricatives</b>	
/s/ → /l/ in 1st syllable (CVC) Gostar → galtar; saltar*	/f/ → /p/ Fricative → plosive in 2 <sup>nd</sup> & 1st syllable Prefer → prepare First → past /s/ → /ʃ/ Glass → rush; lash Probably due to trying to make a long /s/ due to word spelling and to long /a:/ /s/ → /θ/ Second → thicken Initial /se/ understood as /θi/
<b>Affricates</b>	
/tʃ/ postalveolar affricate → velar plosive /k/ Chino → quino	/tʃ/ → /t/ postalveolar affricate → plosive Cheese: tease
<b>Consonant clusters</b>	
Initial cluster /gr/, /tr/ (Cluster with /r/) Gracia → glacia Traje → taje	Initial cluster /pl/ Play → pay → reduction /gl/ Glass → rush → reduction Lash → reduction Middle cluster /tr/ træs / tes → reduction -tr- <i>interesting</i> interesting → intestine / destini Initial and final cluster /dr/-/nk/ Drink: dink → reduction Ding → reduction and /nk/ → /ng/ /fr/-/nd/ Friend: fern → reduction and deferred "r" Final cluster /bl/ Horrible → coldobon

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Table 3. Pronunciation difficulties in Spanish and English.

Table 4 below exemplifies problematic sounds in English and whether they can be improved with audio input (as when using the CD dictionary for the test in this case study). Data show that there is space for improvement since, when given some input, only in 9 out of 20 cases the same phoneme or the pronunciation of a specific phoneme in problematic graphemes and adjacent consonants were mispronounced.

<i>Problematic sound</i>	<i>Mispronounced sound without input</i>	<i>Correct sound after dictionary input</i>	<i>Mispronounced sound after dictionary input</i>
ks	<u>acc</u> ident	excuse	
/o:/, /eI/	<u>al</u> ways, explain, <u>sa</u> y	short, play	
Initial /ə/, /oI/	<u>ann</u> oy	<u>ag</u> ainst (correct pronunciation of diphthong in Spanish "hoy", "voy")	
/θ/	<u>auth</u> or	bathroom	
/d/ (d+ a/e) → /I/, /n/	<u>d</u> ance, deep, dentist, <u>fo</u> od	danger, dirty	
/aI/	<u>f</u> ind	right	
/əʊ/	<u>g</u> o	broken, cold	
/aʊ/	<u>ou</u> t	down, house	
/h/→ /g/	<u>h</u> elp	headache	
/l/→ /m/	<u>l</u> ittle	laugh	
/ʃ /	<u>sh</u> ower		short
br	<u>b</u> read (monosyllable ending in consonant is more difficult than: <i>breakfast</i> correctly pronounced)	brief	
dr	<u>ad</u> dress, child <u>r</u> en		drink
sk	<u>ask</u>		school
kl	<u>cl</u> ean		climb (though <i>quickly</i> –final position- is understood by most listeners)
fr	<u>d</u> ifferent		friend

<i>Problematic sound</i>	<i>Mispronounced sound without input</i>	<i>Correct sound after dictionary input</i>	<i>Mispronounced sound after dictionary input</i>
pr, bl	<b>problem</b>	possible	/k/ is pronounced /bl/ in <i>climb</i> , and <i>drink</i> is understood by one speaker as <i>blink</i> ; so these can be used to improve sound
/s/	sit down		second
/ɜ:/ t+u	turnon		turnoff
ght	tonight		all right

Table 4. Comparison of results with and without dictionary input.

## 7. Concluding Remarks and Recommendations

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The data analysed in this study help us to define an aptitude profile for our student. It should be born in mind that including different listeners for the interpretation of test performance has reflected the existence of both an intelligibility and a listener ability range. Listener ability is an important factor when dealing with people with speech diversity. For the language class, the teacher's (and classmates') ability to understand the student could perhaps be used as a reference to design student's progress along the course and the listener's progress when developing their ability to understand a person with speech sensory diversity.

### 7.1. Assessment Tools

The word reading tests designed for this study have proved useful to detect specific language problems and identify where the speaker is able to improve regarding pronunciation. The rest of the tests show, in different ways, how this particular speaker has successfully used communicative devices (intonation, gestures) to support her speech.

Task choice is also seen as a factor that may influence speech diverse students' performance. Thus, open-ended tasks where content cannot be predicted by the student posed a higher degree of difficulty and lower success rates. In our case study, student intelligibility was also influenced by her confidence on the issues being explained. Talking about a personal experience when content mastery and general vocabulary were present was easier when compared to talking about a topic where her vocabulary stock was low and in which the student had to improvise on content.



Regarding assessment rubrics, they could reflect the improvement experienced by the student along the course. We propose the following sample as a model:

	<i>Unsatisfactory</i>	<i>Satisfactory</i>	<i>Excellent</i>
Pronunciation	No improvement is observed in oral presentation for those sounds that were identified as likely to be improved (to observe progress see last cell in this row)	Efforts are made to improve at least half of the problematic sounds and words (to observe progress see last cell in this row)	There is an observable improvement throughout the presentation and the speaker's ability with problematic words has significantly improved  <b>Observe progress in the following:</b> Correct pronunciation of /ks/; /θ/; /d/ (d+ a/e); /h/; /l/; /ʃ /; /br/; Correct pronunciation of /o:/, /e/; Initial /ə/, /oʌ/; /aɪ/; /æʊ/; /aʊ/ /k/, br, pl/ are correctly pronounced or gestures are used to enhance communication when these sounds appear
Body language	No movement or face expression is observed	Some gestures and expressions enhance presentation when word pronunciation or sentence intonation are challenging	Speaker compensates speech difficulties with gestures when word pronunciation or sentence intonation are challenging. Speaker backs verbal communication with non-verbal resources, enhancing presentation. Speech difficulties are compensated with body language and intonation
Fluency and pace	Speaker occasionally speaks clearly Pace could be improved (more <i>practice</i> , integrate pronunciation, intonation, text mechanics, coherence, cohesion and body language)	Speaker shows fluency improvement and used some of the strategies practiced for intonation, fluency and pace (use of ICT and classroom practice shows in resulting presentation). Adapts sentence length (shortens) for better intonation results	Speaker reached desired fluency and clarity, using all the strategies to their full potential to be understood by the audience

Table 5. Progress rubric.

This rubric implies that the diagnostic assessment has been used to determine the student's abilities regarding pronunciation, fluency and pace and body language. The teacher would then provide opportunities for the student to improve these aspects of oral communication. It should be noted that this rubric is personalized and may be used and adapted for future similar cases for students with speech sensory diversity.

## 7.2. Further Recommendations

### 7.2.1. Specific Advice

Depending on the speaker's difficulties, teachers could provide suggestions with the help of the Higher Education Diversity Services / Equality Challenge Unit. In the case of our student, specific advice would include the following suggestions:

- Slow down or utter syllables separately (p/b campo/combo). The student had difficulties to pronounce “campo” and said “combo” instead. These difficulties could be lessened if she slowed down and pronounced the two syllables slowly.
- Compare to other words that sound similar in the student's mother tongue, for instance:
  - The letter  $\beta$  (pronounced /beta/ in Spanish) for problems to pronounce “better” (better/pita)
  - Spanish interjections “¡ey!”, “¡ay!”, “¡au!” could be used to practice with problems with English diphthongs /ei/, /ai/, /aʊ/
- Recommend the use of gestures for words that have a problematic sound for the speaker when this is possible: hand gestures for “run”, “meet”, “rest”, “drink”, or face gestures for “horrible”. These are examples of words that have appeared in our tests and may be accompanied by gestures. In an oral presentation (prepared speech) the speaker may choose which words or utterances to back up with gestures if he/she is aware of their pronunciation difficulties. In fact, when the speaker used the word “drink” in the English interview, the “drink gesture” removed all possible misunderstandings for this particular word, while in the word-reading test it was one of the problematic words.

### 7.2.2. Training Suggestions

The use of new technologies can help to provide a model for pronunciation and intonation that may be followed by the student. Since the task performed with the aid of a pronunciation dictionary clearly shows improvement, any training in this line will probably give good results.

Specific advice on speech production to increase intelligibility should include:

- Slow down speaking speed
- Break down units
- Rephrase long sentences
- Rephrase phrases that include pronunciation difficulties (e.g. from “healthy food” to “food that is good for you/for your health”)

When setting spoken tasks as part of a subject in the curriculum or as part of a test, test accommodation may include changes in the difficulty or quality of the spoken task such as changing from spontaneous to prepared (e.g. from role-play to oral presentation).

Assessment tools such as the ones used in this study should be part of faculty training that teachers follow before the student with diversity starts tuition with the teacher. Such training should facilitate the student/teacher cooperation and assessment implementation that needs to be achieved in all educational levels, including university level.

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## Notes

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<sup>2</sup> According to Hammill et al. (1988: 217), learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficul-

ties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction.

<sup>3</sup> *Die VHS Volkshochschule Quick Placement Test v.1.* Oxford University Press and University of Cambridge Local Examinations Syndicate UCLES 2001.

<sup>4</sup> The original text was written in English and it was translated into Spanish for

this task. Both language versions are comparable in terms of vocabulary, phrase length and intonation patterns. The content of the dialogue posed no complex interpretation (i.e. it has no complex ideas, metaphors or other issues that could make a difference when processing the text in a foreign language in terms of content).

<sup>5</sup> All listeners were familiar with Spanish as they had been involved in the teaching of Spanish as a foreign language at some point in their career. They all belonged to the same state (Michigan, MI, USA) as did

most teachers our case study subject had as foreign language teachers.

<sup>6</sup> For this exam format see for instance: British Council. Learn English Teens. Describe a photo or picture. <http://learnenglishteens.britishcouncil.org/exams/speaking-exams/describe-photo-or-picture> (accessed 10/30/16); or Cambridge English Language Assessment. UCLE 2016. Cambridge English: Preliminary PET. Exam Format. <http://www.cambridgeenglish.org/exams/preliminary/exam-format/> (accessed 10/30/16).

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