

INDIVIDUAL PRONUNCIATION FEEDBACK FOR FRENCH LEARNERS OF GERMAN BY USING SPECTROGRAMS

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Labex **EFL**



PLAN

Introduction

Project design

Study set-up

Audio collection

Feedback

Preliminary results

Perspectives

INTRODUCTION

- **On-going project**
 - FLACGS (French accent in non-native German speech)
 - ProFee-FLACGS – learners' progression corpus (across time) (since September 2015)

ProFee_FLACGS

- **L1 French → L2 German**
- **Stand alone pronunciation class**
 - Classroom situation
 - Obligatory class for students in the first year of *Langues Etrangères et Appliquées*
- **Corrective feedback**
 - *ad hoc* method – feedback with a delay of one week
- **2nd year of Phd funded by Sorbonne Nouvelle – Paris 3**

Teaching

- Pedagogical aim: improvement of German pronunciation
- Assignments: recordings at home
- Marking students' progression
- Feedback as a pedagogical tool → increased motivation?
- Are spectrograms as a visual feedback a better input than sound files only?
- Does visual feedback (spectrograms) favour pronunciation improvements compared to auditory feedback?



PhD

- Influence of the L1 on the L2
- Acoustic analysis of the features across progression
 - Segmental
 - Suprasegmental
- The link between perception and production improvement
- Perception tests with EEG

ORGANIZATION AND DESIGN

Instruction time	<ul style="list-style-type: none"> • 20h
Institution	<ul style="list-style-type: none"> • University
Treatment provider	<ul style="list-style-type: none"> • Teacher-researcher
Target features	<ul style="list-style-type: none"> • Segmentals • Suprasegmentals
Use of technology	<ul style="list-style-type: none"> • Spectrograms • Alignment at word and phone levels
Feedback	<ul style="list-style-type: none"> • Features grid • Individual spectrogram and alignment • General feedback during class • General feedback with spectrograms
Outcome	<ul style="list-style-type: none"> • Controlled (read speech, semi-spontaneous speech)

see:

Lee, J., Jang, J., & Plonsky, L. (2014). The effectiveness of second language pronunciation instruction: A meta-analysis. *Applied Linguistics*, amu040.

PARTICIPANTS

- **75+5 first grade students majoring in English and German**
 - between 17 and 23 years old
 - 40 normal feedback
 - 35 feedback + spectrograms
 - (+ 5 German native speakers – control group)
- **Linguistic background of FG speakers**
 - German level (CEFR) from A2 to C1/C2
 - 40 French monolinguals
 - 35 French dominant
 - 5 in a French/German household
 - 30 in a French/X household

STUDENTS' ORAL PRODUCTIONS

- **Teacher gives a new assignment every week**
 - 4 obligatory assignments
 - reading task (read speech)
 - picture description task (semi-spontaneous speech)
 - Aim: regular practice of German oral production
- **Students record themselves via *Audacity* or their SmartPhones (using a headset if they own one)**
- **Teacher: sound files**
 - Evaluation of all submitted oral productions
 - Audio quality
 - Transcription

FEEDBACK GROUPS

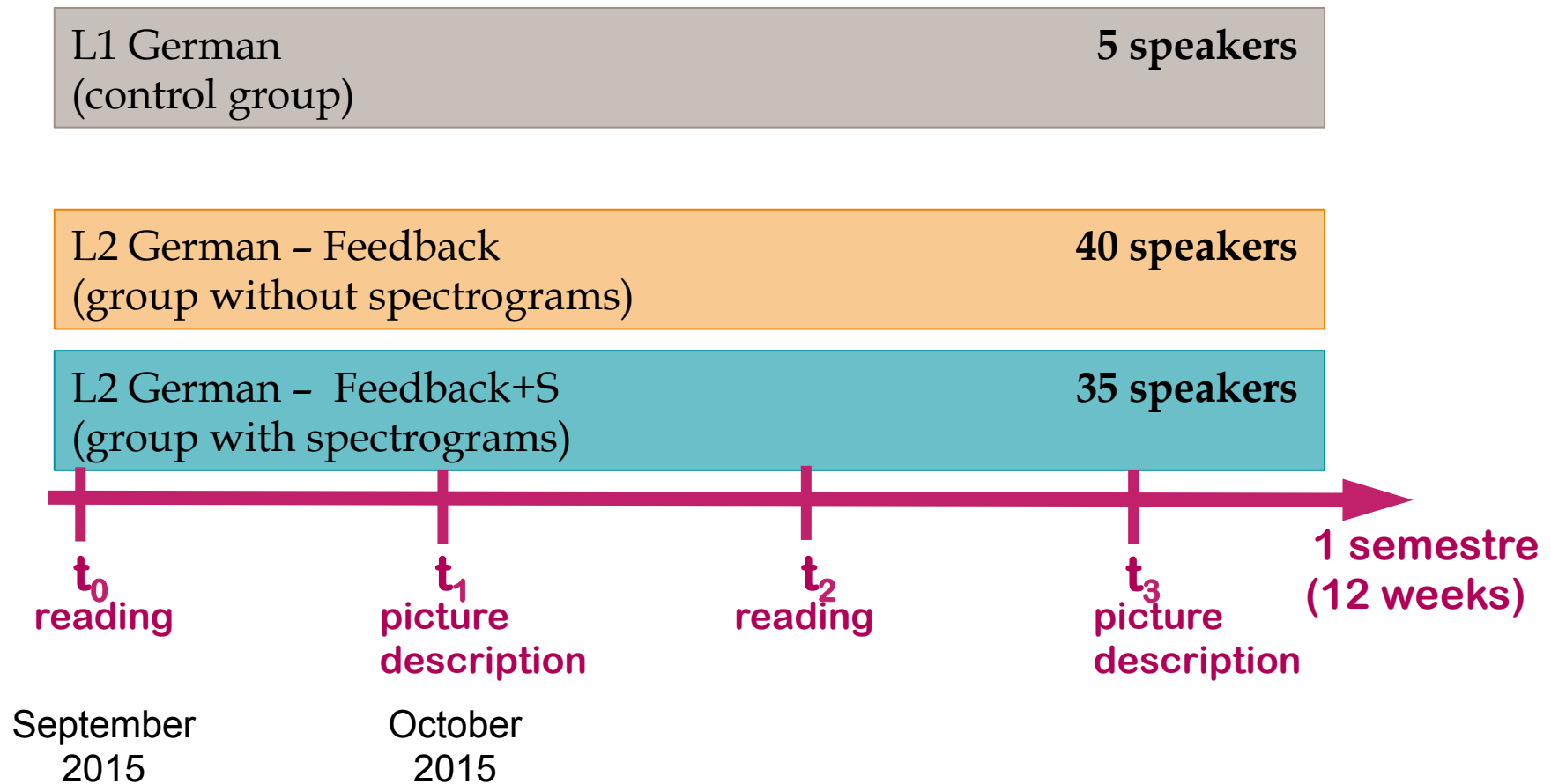
F
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E
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C
K

- Individualized feature-grid for each submitted homework
- General pronunciation feedback in class
 - general pronunciation errors that appeared in the last assignment
 - audio of a German native speaker

F
E
E
D
B
A
C
K
+
S

- Individualized feature-grid + individual TextGrid
 - Manual transcription of the sound files + automatic alignment
- General pronunciation feedback in class + Spectrograms
 - general pronunciation errors that appeared in the last assignment
 - audio and spectrograms of a German native speaker

AUDIO COLLECTION



T0 AUDIO COLLECTION

First assignment – reading task (September 2015)

J. W. Goethe: *Willkommen und Abschied* (188 words)

Group	Nb of audio files	Total time of speech
Feedback	38	~ 2h20 of speech (~2min/file)
Feedback+S	35	
German controls	4	

es schlug mein Herz, geschwind zu
Pferde!
und fort, wild wie ein Held zur
Schlacht.
der Abend wiegte schon die Erde,
und an den Bergen hing die Nacht;
schon stand im Nebelkleid die Eiche,
ein aufgetürmter Riese, da,
wo Finsternis aus dem Gesträuche
mit hundert schwarzen Augen sah.

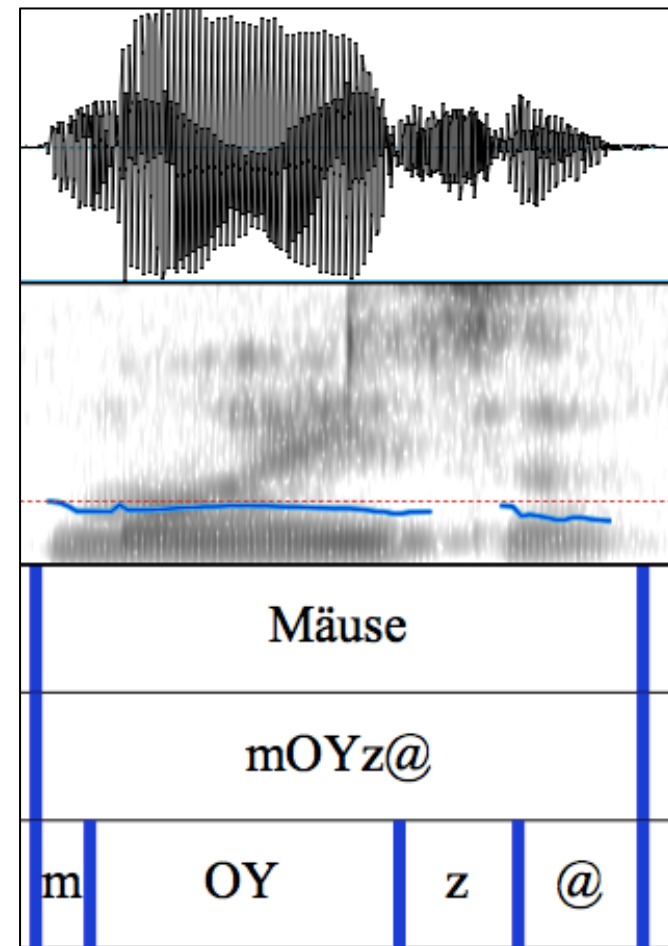
der Mond von einem Wolkenhügel
sah kläglich aus dem Duft hervor,
die Winde schwangen leise Flügel,
umsausten schauerlich mein Ohr;



T₀ FEEDBACK

- 1) Filling out the features grid for the students (they get it before the next class)
- 2) Transcription and automatic alignment for the Feedback+S group:

Automatic Alignment with the *Munich Automatic Speech Segmentation* (MAUS) web-service
<https://clarin.phonetik.uni-muenchen.de/BASWebServices/#/services>



PRONUNCIATION FEEDBACK

1) Individualized feature grid

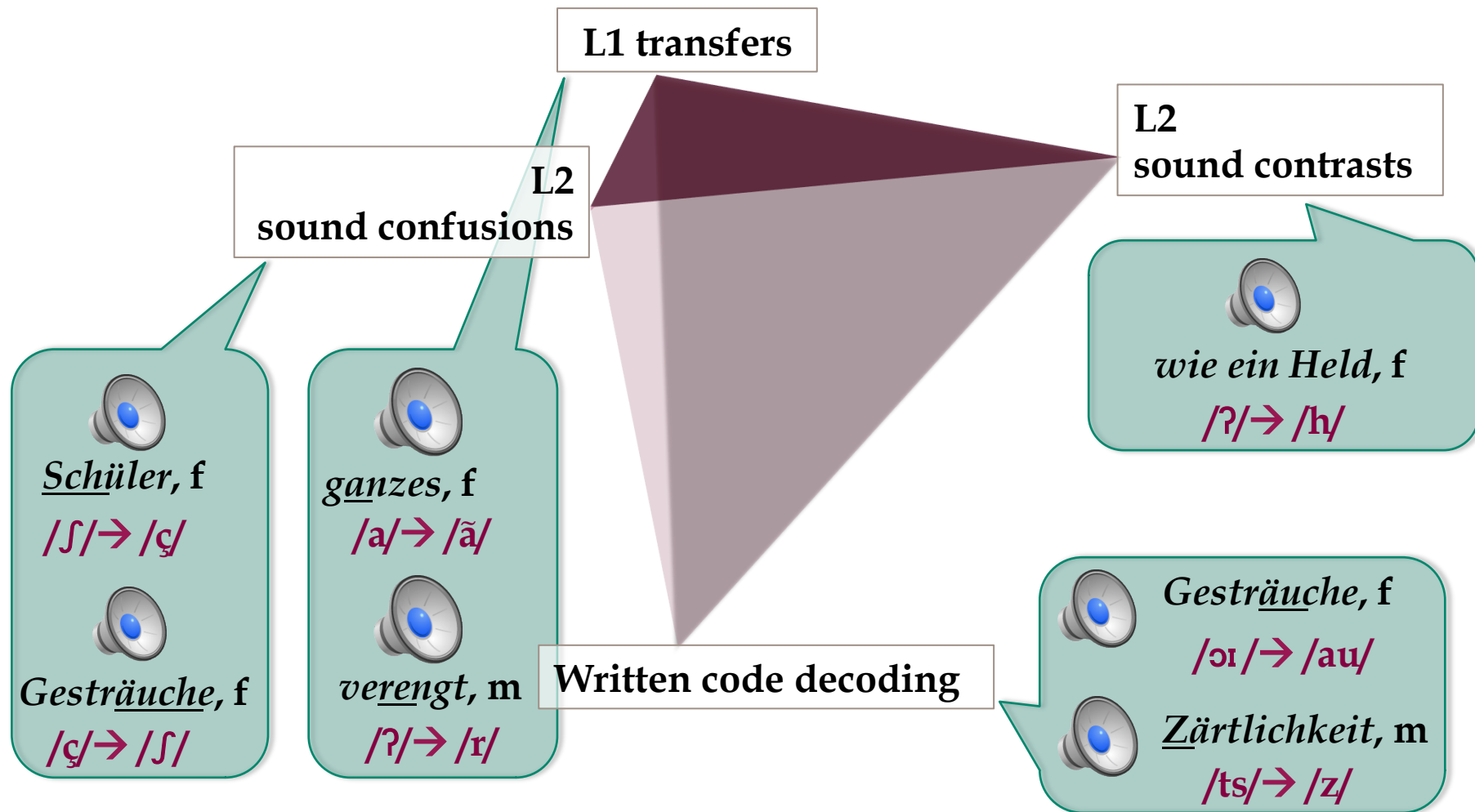
(LPP CNRS Progress Report, 2015)

- Grid that is filled out for each production
- Students can rely on that grid and observe their own progression

2) General pronunciation feedback in class

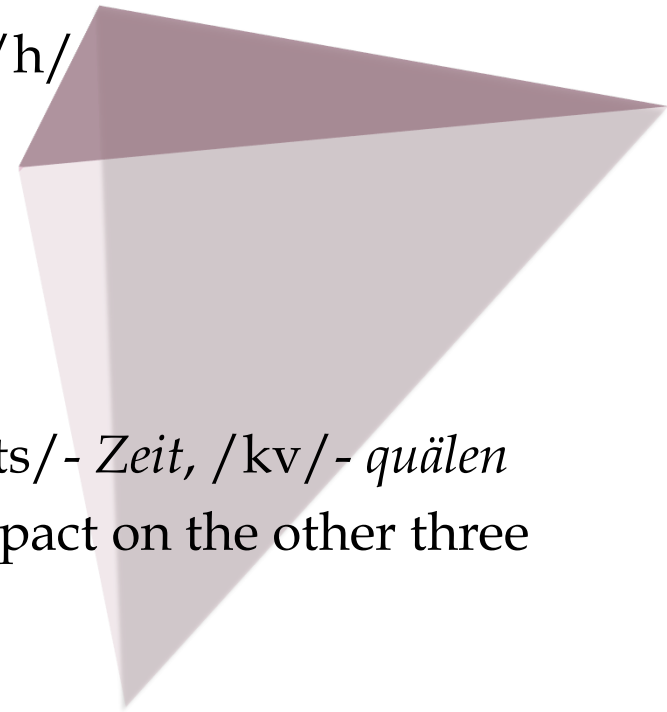
- Standard pronunciation of a German native speaker
- Special attention to difficulties observed in the productions of the students

1) INDIVIDUALIZED FEATURE GRID



FEATURE GRID ORGANISATION

- **L2 sound confusions**
 - e.g. /ç/ and /x/ or /ç/ and /ʃ/
- **L2 sound contrasts**
 - e.g. long and short vowels, /ʔ/ and /h/
- **L1 transfers**
 - e.g. nasalisation, liaisons
 - On the written code but not only
- **Written code decoding**
 - e.g. diphthongs, consonant clusters /ts/- *Zeit*, /kv/- *quälen*
 - Written code decoding has also an impact on the other three



PRONUNCIATION FEEDBACK

1) Individualized feature grid

(LPP CNRS Progress Report, 2015)

- Grid that is filled out for each production
- Students can rely on that grid and observe their own progression

2) General pronunciation feedback in class

- Standard pronunciation of a German native speaker
- Special attention to difficulties observed in the productions of the students

2) GENERAL PRONUNCIATION FEEDBACK

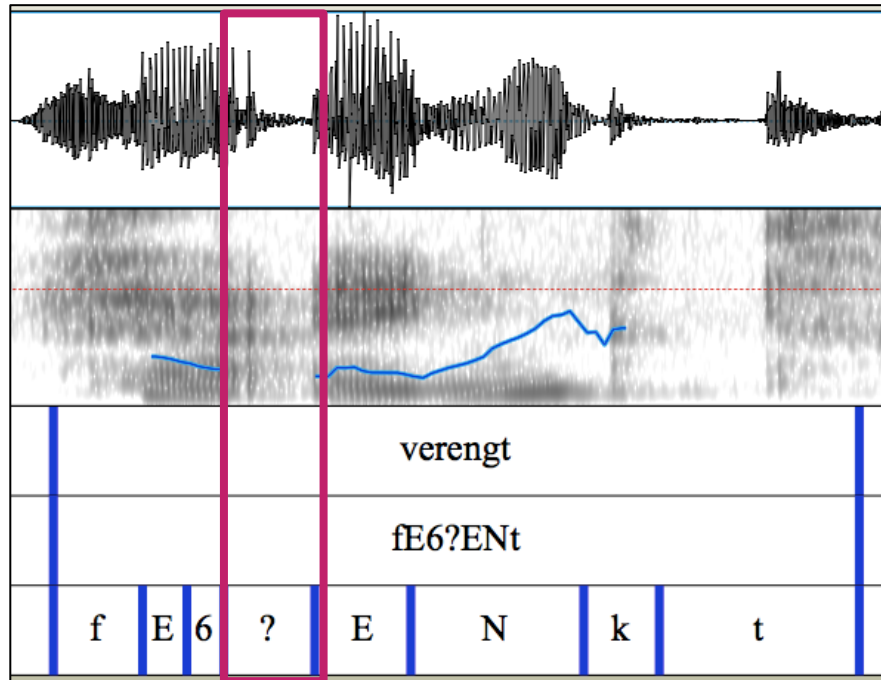
- **Assignment related feedback**
 - General pronunciation errors are picked up and illustrated
 - Homogeneous L1-group
- **Advantages:**
 - Students can make a link between the examples and their own productions
 - Standard German pronunciation input
 - increasing awareness

GENERAL FEEDBACK SLIDES

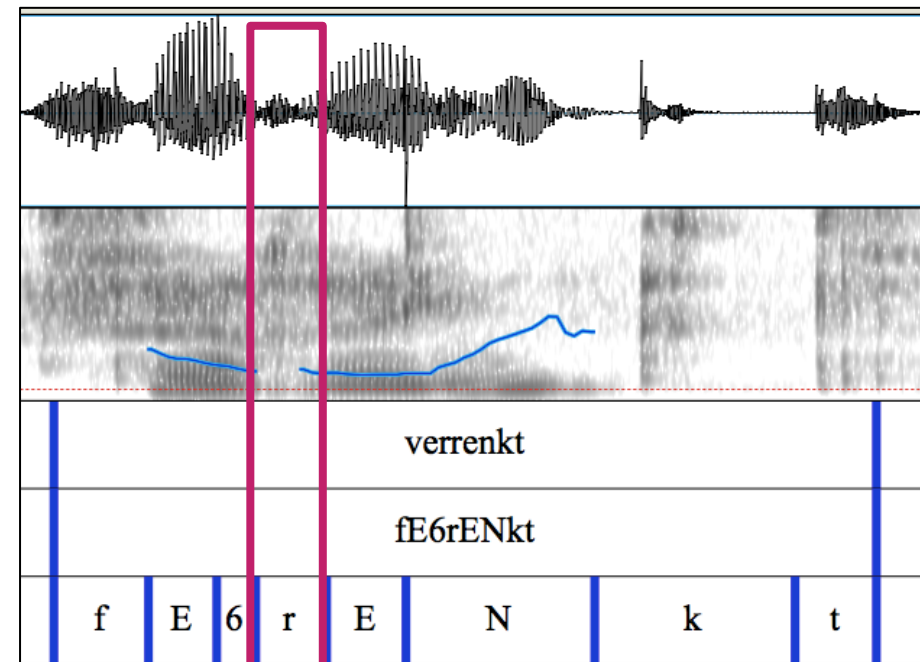
FEEDBACK



GENERAL FEEDBACK SLIDES



FEEDBACK + S



BENEFITS OF THE FEEDBACK

- **Feature grid**

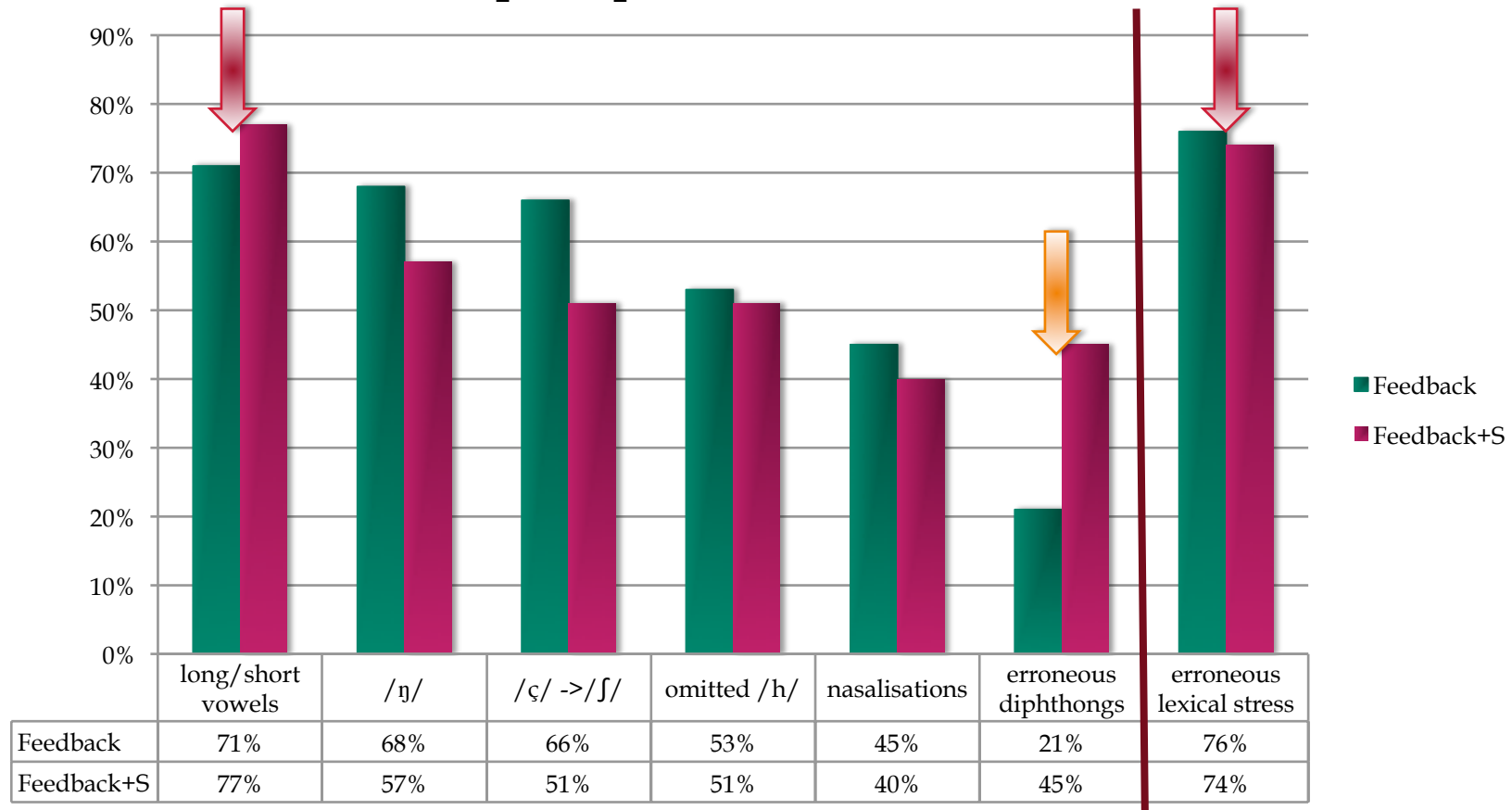
- Individual progression over time
- Checklist for the students' pronunciation
 - Increased awareness
- Very accessible and can be used to monitor future productions

- **Spectrograms**

- Visual feedback
- Permanent compared to the transient audio files
- Easy to obtain and accessible to students
- Pronunciation can be self monitored

PRELIMINARY RESULTS – T0

Most frequent pronunciation error features



% = number of students who make the error / total number of students

PERSPECTIVES

- **Acoustic analysis of students' productions**
- **Analysis of pronunciation progression across the two groups**
- **Relative benefit of the different feedbacks standard vs. spectrograms**

- **Behavioural perception test with native German speakers to rate progression objectively (rating of accentedness)**

- **EEG - experiment with the students in perception (pre-test - post-test)**

FORTSETZUNG FOLGT...