

**UNIVERSIDAD DE EL SALVADOR
FACULTAD MULTIDISCIPLINARIA DE OCCIDENTE
FOREIGN LANGUAGE DEPARTMENT**



UNDERGRADUATE WORK

**A CORRELATIONAL STUDY ON PERSONAL AND ENVIRONMENTAL FACTORS
THAT HINDER A NATIVE-LIKE ENGLISH PRONUNCIATION OF VOWEL
SOUNDS IN FOURTH AND FIFTH-YEAR STUDENTS AT THE WESTERN
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INDEX

INTRODUCTION.....	xii
ABSTRACT	xiv
CHAPTER I: STATEMENT OF THE PROBLEM	16
1.1 Description of the Problem or Phenomenon	18
1.2 Justification and Scope	20
1.3 Objectives.....	23
1.3.1 General Objective.....	23
1.3.2 Specific Objectives.....	24
CHAPTER II: STATE OF ART	25
2.1 Recent History of English Pronunciation.....	25
2.2 Dialects in the United States	26
2.3 Definition of Basic Terms	28
2.4 Spoken Language and Pronunciation Accuracy Precedence	29
2.5 Relevant Topics Related to English Vowel Sounds	29
2.5.1 Accentedness, comprehensibility, intelligibility and their relation with English pronunciation.....	29
2.5.2 Accent Measurement by Reduced Vowel(s).....	31
2.5.3 Comparison of Vowel Phonological Systems of English and Spanish	32
2.5.4 Vowel Phonetic Analysis of the 3000 Most Common English Words.....	36
2.6 Pronunciation Problems of Non-native Speakers of English	38
2.7 Mother Tongue Interference in Second Language Acquisition	41
2.8 Nature of Pronunciation Problems of Spanish-Speaking Learners of English	42
2.8.1. Vowel Pronunciation Problems.....	43
2.8.2. Consonant Pronunciation Problems.....	44
2.8.3. Number-of-Syllables Pronunciation Problems	46
2.8.4. Word-Stress Pronunciation Problems.....	46
2.8.5. Sentence-Stress Pronunciation Problems.....	46
2.8.6. Intonation Pronunciation Problems	47
2.9 Personal (Internal) and Environmental (External) Factors that Influence Pronunciation Problems.....	47
2.9.1 Age	47
2.9.2 Gender.....	51

2.9.3 Extraversion / Introversion	52
2.9.4 Motivation	56
2.9.5 Amount of Exposure	59
2.10 English Pronunciation Teaching.....	61
CHAPTER III: RESEARCH METHODOLOGY	67
3.1 Paradigm and Design	67
3.2 Sampling Procedure.....	67
3.3 Preliminary Phase	68
3.3.1 Approaching the Field of Study	68
3.3.2 Diagnostic Study	70
3.3.3 Definition of the Problem	72
3.4 Planning Phase	74
3.4.1 Time Table	75
3.4.2 Literature Review	77
3.4.3 Operationalization of Variables	77
3.4.4 Data Collection Instruments	80
3.4.5 Validation of Data Collection Instruments	82
3.4.6 Validity and Reliability	82
3.4.7 Ethical Aspects.....	82
3.5 Execution Phase.....	83
3.5.1 Data Collection Procedure.....	83
3.5.2 Data Processing	85
3.5.3 Data Analysis and Interpretation	85
3.6 Budget.....	85
CHAPTER IV: ANALYSIS AND INTERPRETATION OF DATA.....	87
4.1 English Phoneme Pronunciation Accuracy (EPPA) Index of Vowel Sounds	88
4.1.1 Composition and Results of the Written Pronunciation Test	88
4.1.2 Phoneme Pronunciation Accuracy versus Fluency	90
4.1.3 Statistical View of the Results of the Written Pronunciation Test.....	93
4.1.4 Sample of Words Tested for EPPA.....	96
4.2 Personal Factors and EPPA Index of Vowel Sounds	102
4.3 Environmental Factors and EPPA Index of Vowel Sounds.	113
4.4 Environmental-Personal Factors and EPPA Index of Vowel Sounds	122

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS	131
5.1 Conclusions	131
5.1.1 General Conclusions	132
5.1.2 Specific Conclusions	134
5.2 Recommendations	137
5.2.1 Future Researchers should:.....	137
5.2.2 Students should:	138
5.2.3 Teachers should:.....	140
5.3.4 University authorities and Funding Institution (government) should:	142
REFERENCES.....	144
APPENDIXES	150
Appendix A: Vowel-Phonetic Analysis of the 3000 Most Common English Words in Speaking and Writing According to Longman Communication 3000.....	150
Appendix B: English Pronunciation Problems of Hispanics.....	156
Appendix C: Factors that Influence the Acquisition of a Second Language	163
Appendix D: Observation Guide for Teaching Practice II and Seminar II Students.....	165
Appendix E: Questionnaire Survey	166
Appendix F: Interview Guides and Transcriptions	183
Interview 1	183
Interview 2	189
Interview 3	192
Appendix G: Statistical Tests	195
Appendix H: Tabulated Data and Calculations	198
Appendix I: Descriptive Data of Personal and Environmental Factors.....	211
I-1 Analysis of Personal Data and Results by Age and Gender	211
I-3 Use of Pronunciation Learning Strategy	215
I-2 Personal Data According to Introversion and Extroversion	218
I-4 Use of Dictionary and Pronunciation Software/Websites.....	220
I-5 Access to ICT Tools.....	223
I-6 Use of Smartphone	224
I-7 Methods and Tools Used for Pronunciation Improvement	225
I-8 Types of Exposure to Native Speakers	227
I-9 Employment and its Rate for Fifth and Fourth-year Students	228

I-10 Changes in Learning Resources Suggested by Students	229
I-11 Most relevant Environmental Data for Three Generations	235
Appendix J: Words Reported as Pronunciation Troublesome by Students	239
Appendix K: Correlation Graphs	246
Appendix L: Pronunciation Video Links	265
Appendix M: Validation Sheet	267
ANNEX	269

INTRODUCTION

Regarding first language acquisition, pronunciation accuracy is always taken for granted under such a natural and smooth process. For second or foreign language learning, there is a sort of struggling trial-and-error process that linguists call interlanguage, which is difficult though not impossible to overcome, especially when dealing with production of spoken English, an amazing and “musical” language, which also implies a peculiar and difficult phonetic system to Hispanic speakers, learners of English, regardless their reaching the end of a major in English. Thus, “commitment”, “motivation”, and “exposure” seem to be key words to success on this regard. How these key words and other factors come into play, qualitatively and quantitatively, to contribute to pronunciation accuracy is the challenge of this study project.

This research study presents the results of one year of investigation, trying to find answers for the main research question: which factors, highly dependent on students or within their reach, have affected the English Pronunciation Accuracy of Vowel Sounds in Fourth and Fifth Year Students, who majored “Licenciatura en Idioma Inglés, Opción Enseñanza”, at the Western Multidisciplinary Campus (WMC), University of El Salvador (UES), term II, 2017?

Class observation guide, questionnaire-survey, and Teacher interview guide are the instruments used though the second one, directed to students, is the prominent one, which include a pronunciation written test at the end. As secondary analysis, yet necessary examinations that are part of data processing, statistical tests revealed that pronunciation accuracy levels were similar for two populations of students, which included fourth and fifth year. Also, simultaneously, a statistical analysis of vowels frequency was carried out by researcher based on a widely known bibliographic corpus of 3000 most common words.

The type of study was intended to be correlational, under a mixed paradigm, qualitative and quantitative. The hypothesis or tentative answer to the research question mentioned before is: Insufficient quantity and quality of environmental factors (exposure, resources, etc.) and personal factors (motivation, personality, etc.) hinder a native-like English pronunciation of fourth and fifth year students. Therefore, there must be a positive correlation between any of

these factors, or both, and English Phoneme Pronunciation Accuracy EPPA of Vowel Sounds, which is the dependent variable.

The consonant sounds were taken out of the study, not only for delimiting purposes, but also for importance order. Regarding scale matters, for instance, class observations and data reported by the students revealed that they still are twice as much when pronouncing vowel sounds than when producing consonant sounds. Such a ratio was also confirmed when consulting and discriminating from the pronunciation error types listed by phoneticians.

Fortunately, positive and high correlations were found for each of the two independent variables, Personal and Environmental Factors, when related to EPPA of the Vowel Sounds. The hypothesis resulted to be true and the correlations found were strong, some even close to the maximum value of 1.

ABSTRACT

For a sample size of 45 fifth-year students of Seminar II, the researchers found nonlinear, polynomial correlation coefficients between each of the independent variables, Personal Factors and Environmental Factors, and English Phoneme Pronunciation Accuracy (EPPA) of Vowel Sounds, the dependent variable. Some personal sub variables, like introversion/extroversion, induced nonlinearity, due to their peak located somewhere in the scale instead of one extreme. Three correlation coefficients, each of which obeyed a distinct probability distribution, were found for each of the independent variables. The correlation coefficients R_s ranged between $R = 0.82$ and $R = 0.90$, and between $R = 0.86$ and $R = 0.98$ for the Personal-EPPA and the Environmental-EPPA correlations, respectively. Such coefficients proved very strong correlations, yet the sizes of the statistical subsample sizes ranged between 9 and 17 students for the 3 probability distributions under presumption.

In a similar, second numerical experiment, the second sample of 50 fourth-year students of Teaching Practice II coefficients R_s ranging from **0.80 to 0.92** and from **0.67 to 0.90** were found for the Personal-EPPA and the Environmental-EPPA regression analyses, correspondingly. The subsample sizes obtained in this experiment ranged between 9 and 19 students. For a third experiment, adding up both populations to obtain a sample size of 95 students, more numerical reliability and graphical stability were achieved, as observed according to narrower R_s ranges and smoother graphs, respectively. The experiment was carried out on the environmental variable only, for which R_s of **0.74, 0.85, and 0.80** were calculated for subsample sizes of 23, 33, and 25 students, correspondingly, which were classified as upper, intermediate and lower learning curves, accordingly. From the first two statistical exercises it was clear that the upper learning curves contained the smallest number of students, yet the size trend of the other two curves was unclear since they remained interchangeable, either by variable or by population. However, the third experiment unveiled the intermediate learning subgroup as the largest one and the other two as almost equal. Yet, the sample size of 95 is not considered sufficient enough and another Teaching Practice II group of 50 students would have been needed, as long as equal level of English would have

been established by mandatory statistical tests, as it was done in all the samples processed in this study.

Using a 95% confidence, the trimmed mean grade of the written pronunciation test for Seminar II students was 5.06 ± 0.34 , in a scale from 0 to 10. The passing grade for the same population was 17.8%, a low percentage for senior students about to graduate. Similar mean values were obtained for the 50 fourth-year students of Teaching Practice II. In fact, statistical tests for centrality and dispersion revealed an equal pronunciation level for the two populations, according to mean grades. Reduced vowels, informally called schwa /ə/, schwi /ɪ/, and schwu /ʊ/, were by far the most mispronounced vowel sounds, the first two because of their high occurrence and the third one because of its high frequency in modal auxiliaries (would, could, should) and other daily-use words, like common words (good, book) or inflectional verb forms (took, shook). Most of the Hispanic's accentedness has been related to one or more of these reduced vowels in the literature.

CHAPTER I: STATEMENT OF THE PROBLEM

Phoneme-related pronunciation errors and other pronunciation issues like word stress and sentence stress are part of the learning process for English learners in second language acquisition. Selinker (1972) defined this trial-and-error process as interlanguage and college Salvadoran students are not exempt from it.

However, when such a process lasts longer than the reasonable, allotted time for a Bachelor's degree in English Language at the University of El Salvador (5 years), questions may ensue about the effectiveness and or efficiency either on the student's side or on the teacher's side, or both.

One possible illustration of the problem is the several pronunciation factors that hinder a native-like pronunciation, particularly regarding phoneme pronunciation inaccuracy that generations of fourth and fifth year students majoring "Licenciatura en Idioma Inglés Opción Enseñanza" have been historically experiencing at the Western Multidisciplinary Campus (WMC) of Universidad de El Salvador (UES).

According to Gilakjani (2011), many learners of English as a second language have "major difficulties" with English pronunciation even after years of learning the language. While one author and his team has stated a time span from 3 to 5 years to attain oral English proficiency (Hahta et al., 2000), other respectable scholar, blog author and faculty member in a Canadian university cites the interesting key number of 10,000 hours of exposure to become fluent in English (Eaton, 2016). This is the first reference that takes fluency as the main indicator of English learning.

According to this criterion of total hours of exposure and to data gathered for this research, a gross estimate for the two populations under study indicates that lower-exposure and higher-exposure students would need 9.8 and 5.3 years to become fluent, respectively. In fact, class observations for the present study offer corroboration because from each population, of around 50 students each, there were 4 or 5 students that seemed having become naturally and reasonably fluent, though not necessarily phonemically accurate. This means that some higher-exposure students had become or were about to become fluent.

The former study already cited has provided estimates of the time spans to reach oral proficiency in ESL (English as a Second Language) or bilingual environments of schools. A policy decision making report that gathered data from four school districts in California and two districts in Canada established that oral English proficiency takes 3 to 5 years to develop while academic English proficiency takes 4 to 7 years, even in two California districts that are considered the most successful in teaching English to Limited-English-proficient (LEP) students (Hahta et al., 2000). Such a report was carried out in provision to state-support policies to LEP students, for whom, given the constraints of regular formal school hours, it is practically impossible to keep pace with their peers who are native English speakers and who continue to develop their language skills, keeping a big and ever-increasing gap with their non-native pairs.

Note that oral English proficiency (OEP) is defined here as management of conversational English (pg. 3), which is cognitively undemanding, embedded in context, and therefore of simple code. Such a simple code proficiency is sufficiently useful for everyday social contact but not for subject matter learning, for which academic English proficiency (AEP), a term coined by experts, is mandatory. Note also that students achieving such an OEP started at the Kindergarten level. OEP is determined through a standardized proficiency test and proficiency levels are designated as A through F. Level F is the uppermost and it means Fluent. This is the second study cited that takes fluency as the main parameter of oral proficiency. None of these two studies considers seriously the dichotomy fluency-accuracy which is a complex problem in EFL University learning environments like ours, assuming of course that Syntax is not a problem anymore. The reasons behind this omission remain to be seen, either because accuracy is taken for granted in those bilingual and ESL environments or because of other unknown motives.

The study proposed here by researchers focuses on accurate vowel phoneme pronunciation of fourth and fifth-year students of such a major at the Foreign Languages Department of this higher education institution just mentioned, term II 2017, as they have already finished the interlanguage process that corresponds to the instructional stage. Other aspects involved in native-like pronunciation are tone, word stress, and sentence stress; however, they are not included as part of this correlational study (See Justification and Scope).

Although such factors affecting English Pronunciation Accuracy (EPA) have been theoretically categorized as being of environmental and personal origin, they have rarely or never been measured or quantitatively linked to EPA, specifically to phoneme pronunciation accuracy. Such a measurement is one of the main goals of this study to establish the degree of strength between the variables. The environmental and personal factors affecting EPA of phonemes are also known in the technical literature as external and internal factors, respectively. EPA at the phoneme or segmental level becomes English Phoneme Pronunciation Accuracy (EPPA) and it will be considered in this study as the best quantitative index or measurable form of a native-like English pronunciation, though it is only one of the components of English pronunciation.

It is essential to clarify that this research is based on American Standard English that according to Yoshida (2016), is the form of English spoken in the United States and Canada by educated speakers and most TV or radio announcers. (There are only slight differences between standard U.S. and Canadian English.) It can also be called North American English, General American English, or just American English. Many Americans speak Standard American English, often with slight regional variations.

1.1 Description of the Problem or Phenomenon

Local, empirical background on the problem at hand has been provided by two diagnostic studies; one that was part of students' term project investigation of the Seminar I class carried out in May 2016 (unpublished) and the second one carried out in 2017 as part of this research project. According to these studies, the majority of fourth and fifth-year students majoring "Licenciatura en Idioma Inglés, Opción Enseñanza" at the Western Multidisciplinary Campus of the University of El Salvador (UES) have shown and still show (semester II 2017) noticeable pronunciation accuracy flaws when pronouncing many words during their class presentations or their class participations. According to the second diagnostic, the majority of the inaccurately pronounced phonemes corresponds to vowel sounds (see 3.3.2 and 3.3.3).

Some teachers at the Foreign Languages Department claim that such flaws obey to insufficient practice or no practice at all outside the classrooms, so that according to some teachers' opinions, the majority of the responsibility lays on the students' shoulders. Such a

claim is probably truthful, but not the only explanation. Other teachers' opinions (Teachers' interviews, Appendix F) and careful analysis reveals that there might be underlying causes, such as a systematically, chronically insufficient exposure inside and outside the classroom, as well as faulty study habits.

According to these teachers, in addition to the insufficient exposure inside the classroom, either quantitative or qualitative, students' inaccurate pronunciation may also depend on environmental factors dealing with learning resources, like very large class groups for students at any level, a scarcely-equipped laboratory, or even methodological and curricular flaws that need improvement (see 3.3.2. and 3.3.3 for more details).

The faulty study habits will be classified by researchers as those not pertaining to the lack of systematic practice; instead, faulty study habits are, for example, not looking up words pronunciation in an English-English dictionary anticipating a presentation or a practicum class.

Certainly, the first of these diagnosis studies revealed that even fifth year students frequently mispronounce phonemes in common words like work, word, university, and structure, although these words also belong to an academic environment, very familiar to them, and which were high-frequency use words or every-day use words. All of it, despite these fifth year students had already taken a pronunciation course, as a subject matter, so that they already had an accurate knowledge of the English phonological system. In addition, they omit the final consonant of consonant clusters (ask, cold, explained, changed) and include a /ə/ or an epenthetic vowel at the beginning of words whose first consonant is /s/ (strategies, schedule). In the same diagnostic study, it was observed that only one out of twelve senior students applied self-correction to a mispronounced phoneme.

In the second diagnostic study carried out in semester II 2017, researchers focused on vowel phoneme pronunciation. It was observed that some students seem to be capable of acquiring a native-like pronunciation, but the majority of them presented common pronunciation mistakes.

An important aspect to take into account is that pronunciation is usually place at the bottom of the list in the class. In addition to promote development of the four macro skills,

teachers have to teach grammar, vocabulary, etc., which sometimes enforces pronunciation error correction to be reduced to checking most common mispronounced words at the end of the class.

Some of the most frequent error *types* students make, as observed in the referred second diagnostic study (2017), include the phonemes: /æ/ (that, have), /ɪ/ (studying, will), /ʊ/ (could, should), and /ə/ (student, problem), /ɔ/ (also, because).

Other common aspects of the external or environmental factors that affect students' pronunciation accuracy include technological and budget limitations and lack of motivation-triggering messages from the teachers. Regarding technology, the language laboratory should be updated and its use must be extensive to other subject matters and not only of exclusive use of one subject matter (English pronunciation).

On the other hand, budget limitations of the institution do not allow for reduction of the very large groups, which preclude an intensive participation of students from occurring in the classroom, especially in key courses like "Readings and Conversation I and II," respectively. To add to this condition, usually students receive classes in very small rooms packed of desks and not fit for the number of students.

Taking these aspects into account and aside from the several factors that teachers have mentioned and researchers have observed, important questions arise: which of the most important environmental and/or personal variables are dominant in affecting senior student's English Phoneme Pronunciation Accuracy (EPPA) of Vowel Sounds? Which sub-variables (or factors) are standing behind this dominant variable(s) at the Language Department of WMC of the UES? How strong is the bond between the environmental-personal factors and EPPA of Vowel Sounds? Is the strength of the link similar for the two independent variables (Personal Factors versus Environmental Factors) or is any of the two a significantly dominant variable?

1.2 Justification and Scope

On the one hand, the correlation coefficients to be found would be an academic contribution in determining the strength of the variables under investigation; that is, how weak

or how strong the three possible relations are, specifically the relationship Environment Factors-EPPA Index, Personal Factors-EPPA Index, or Personal-Environmental Factors versus EPPA Index. However, since a qualitative link has been established in the literature, a theoretical bond is taken for granted. Also, as far as the researchers investigated, the relationships proposed have not been measured either nationally or internationally, at least to the extent of the electronic bibliographic research at hand.

On the other hand, from a pragmatic and social angle, pronunciation accuracy is a key component of oral proficiency, which has become inevitable for graduate students who are employed in emerging jobs, such as call centers or embassy positions. In addition, new opportunities have been opening up outside traditional occupations or geographical boundaries, either through telework or on-site through jobs legally available abroad for professional individuals through work visa programs. In such native or quasi-native environments, non-natives' mispronunciation can lead to misperception and ultimately to confusion of the intended meaning on the natives' side (see examples in 2.5.4). Most of such a misunderstanding potentially occurs when using pronunciation pairs that contain vowel pairs, particularly "short i" /ɪ/ versus "long i" /i/ and "short u" /ʊ/ versus "long u" /u/, which substantiates directing the study to vowel sounds pronunciation.

Pronunciation accuracy is a key component of this oral proficiency. Inside this pronunciation accuracy, vowel sound accuracy plays a relevant roll, even defining accentedness, comprehensibility, and intelligibility to some experts (see 2.5.1). Also, according to observations made during the last diagnostic study and data reported by students surveyed, they err twice as much when pronouncing vowel sound than when producing consonant sounds, which justifies the priority of vowel sounds of this investigation.

Much has been written about Latin accent or pronunciation problems mainly related to English phonemes non-existent in Spanish; however, no correlation study seems to have been conducted to demonstrate a quantitative or numerical relation between EPPA Index and English exposure or its practice, for example. Additionally, the correlation study is expected to reveal some by-products, such as additional key parameters, of research and academic importance, like the optimum number of hours of spoken English exposure a week. In addition, some of the exposure or practice types incorporate a strong emotional component,

which might show up in the respective correlation graphs. In short, this study may reveal more than it is initially expected.

One of the most noticeable limitation is that EPPA is based only on English phonemes, called segmentals, in this case specifically of vowel sounds, disregarding other suprasegmental components of the EPPA at the time of calculating an equivalent composite score for this dependent variable. Also, EPPA is evaluated at the word level, disregarding more complex levels, such as the phrase and the sentence levels, respectively, where pronunciation accuracy becomes more difficult to manage (Peña G. et al, 2016). For these reasons, the term EPPA (English Phoneme Pronunciation Accuracy) has been coined in this study to provide clarity about this target dependent variable to be observed and sampled.

In addition to the complexity, subjectivity, and lacking state-of-art involved in trying to include into the composite EPPA score of vowel sounds more variables, other than phoneme pronunciation accuracy, the effort involved would not be worth to try for two technical or practical reasons. The first reason, of practical and academic order, is that fourth and fifth-year students do not exhibit great word-stress problems, particularly regarding common use or high frequency words, which are to be used in the tests to collect pronunciation data. These high-frequency words aim to lower students' emotional filter and to cancel the effect of other factors while speaking, like focusing in grammar or hesitation, to give one example.

The second reason, of technical and strategic nature, is that after a systematic investigation any correlational study regarding pronunciation has not been found published either printed or digital, thus being advisable to start at the basic level, which is the phoneme and the word level. The results of this study may have research and academic implications for future thesis topics dealing with levels that are more complex and/or including more pronunciation components, in addition to phonemes.

Other minor limitations or obstacles are students' boundaries on the access to ICT tools (Information and Communication Technology), due to the general conditions of a developing country. Internet access, for example, is still a big limitation for students that come from sub-urban areas. However, having students with low English pronunciation exposure can be advantageous to have a higher data range to better define a statistical trend. The true limitation

or obstacle would be to have only low-exposure type students on the plots, which would compel to further sampling of other populations.

Statistically speaking, the scope is highly determined not only by the size of the sample, but also by the variability of the data, which allows defining a dominant pattern for the plot or cloud of collected data. Finally, yet importantly, it is the paradoxical fact that pronunciation accuracy, an oral skill, was measured by a written test included in the last part of the questionnaire-survey, as it is the easiest and fastest way to gather data for the two independent variables and the dependent variable (EPPA Index or EPA of vowel phonemes). The validity of EPPA Index by written means will largely depend on the number of students to be part of oral activities to plot a correlation graph between the EPPA Index score and the actual oral score obtained by students during the practice of spoken words.

To collect these oral data, it is initially devised that researchers can have students pronounce, at the exit door, the same words, which correct phoneme they just selected in a written form in the questionnaire-survey inside the classroom. This way, all the “pronounced” words answered in a written way in the questionnaire can be contrasted to the actually pronounced words, spoken by the students, thus obtaining a confidentiality index or factor of the pronunciation written part of the questionnaire.

1.3 Objectives

1.3.1 General Objective

1. To determine which environmental and personal factors affect, in a superlative degree, the development of English Phoneme Pronunciation Accuracy of vowel sounds (EPPA Index) in fourth and fifth-year students majoring “Licenciatura en Idioma Inglés Opción Enseñanza” at the WMC of the UES, Semester II 2017

1.3.2 Specific Objectives

1. To determine whether there exists a correlation between English Phoneme Pronunciation Accuracy (EPPA Index) and PERSONAL FACTORS like attitude, personality, motivation, and aspiration
2. To establish whether there is a correlation between EPPA Index and ENVIRONMENTAL FACTORS, like exposure to English language and learning resources
3. To state whether there is a correlation between EPPA Index and PERSONAL-ENVIRONMENTAL FACTORS, a composite variable

CHAPTER II: STATE OF ART

A basis to explain and itemize the pronunciation error types made by native Spanish speaking learners of English has been searched and found. The lists of pronunciation errors presented are based primarily on a comparison between the two phonological systems, English and Spanish. However, case studies, observations made of the daily academic life, and recent diagnostic studies confirm such lists totally or partially, depending on the students' academic level.

Nonetheless, before approaching the pronunciation errors made by Hispanics, a broader, global picture needs to be presented. Bibliographic research allows one to subsume the causes affecting pronunciation into two broad categories: environmental and personal factors, also called external and internal factors, respectively. Research made for Chinese and French languages is cited to the extent that they shed light on the personal factors that affect English pronunciation accuracy in a second language (L2) learning environment or ESL environment. Before going any further, definition of basic terms related to pronunciation and historicity remarks are given, before arriving to more-in-depth theory.

2.1 Recent History of English Pronunciation

According to the online Cambridge dictionary, contrary to common Latin American belief, the standard British accent has drastically changed in the past two centuries, while the typical American accent has changed only subtly, as cited in the next indented lines:

Traditional English, whether spoken in the British Isles or the American colonies, was largely "rhotic." Rhotic speakers pronounce the "R" sound in such words as "hard" and "winter," while non-rhotic speakers do not. Today, however, non-rhotic speech is common throughout most of Britain. For example, most modern Brits would tell you it's been a "hahd wintuh," instead of it's been a "hard winter".

It was around the time of the American Revolution that non-rhotic speech came into use among the upper class in southern England, in and around London. According to John Algeo in "The Cambridge History of the English Language" (Cambridge University Press, 2001), this shift occurred because people of low birth rank who had

become wealthy during the Industrial Revolution were seeking ways to distinguish themselves from other commoners; they cultivated the prestigious non-rhotic pronunciation in order to demonstrate their new upper-class status.

Algeo wrote "London pronunciation became the prerogative of a new breed of specialists — orthoepists and teachers of elocution. The orthoepists decided upon correct pronunciations, compiled pronouncing dictionaries and, in private and expensive tutoring sessions, drilled enterprising citizens in fashionable articulation."

The lofty manner of speech developed by these specialists gradually became standardized — it is officially called "Received Pronunciation" — and it spread across Britain. However, people in the north of England, Scotland and Ireland have largely maintained their traditional rhotic accents. Most American accents have also remained rhotic, with some exceptions: New York and Boston accents have become non-rhotic. According to Algeo, after the Revolutionary War, these cities were "under the strongest influence by the British elite."

The previous cited paragraphs represent only a brief example of English pronunciation historical facts. Similarly, there exists many other English accents around the world, such as Australian, Canadian, Indian, and South African English, just to mention a few. Each of these accents has its unique history.

Even inside the US territory, there are several accents according to places, races, and other factors.

2.2 Dialects in the United States

Even though this research deals with native-like pronunciation referring to American Standard English pronunciation (Ch. 1), it is important to look at the different dialects used in the United States. Delaney (n.d.) states that:

Not all people who speak a language speak it the same way. A language can be subdivided into any number of dialects, which each vary in some way from the parent language. The term, accent, is often incorrectly used in its place, but an accent refers

only to the way words are pronounced, while a dialect has its own grammar, vocabulary, syntax, and common expressions as well as pronunciation rules that make it unique from other dialects of the same language. Another term, idiolect, refers to the manner of speaking of an individual person. No two people's idiolects are exactly the same, but people who are part of the same group will have enough verbal elements in common to be said to be using the same dialect.

Three things are needed for a new dialect to develop: a group of people living in close proximity to each other; this group living in isolation (either geographically or socially) from other groups; and the passage of time. Given enough time, a dialect may evolve to the point that it becomes a different language from the one it started as. English began existence as a Germanic dialect called Anglo Saxon that was brought to England by invaders from Germany.

The Anglo Saxon peoples in England were now geographically isolated from their cousins in Germany which allowed the dialects to evolve in different directions. Other invaders would also influence the development of English with their languages until the modern English we speak today has become so different from the modern German spoken in Germany that a speaker of one cannot understand a speaker of the other. Thus English and German are considered to be two distinct, though related, languages. The other modern languages in this family are Dutch, Swedish, Danish, Norwegian, and Icelandic.

In conclusion, Delaney presents the map below with all the different dialects spoken in the United States. These dialects cannot be considered incorrect; however, dialects convey a social prestige within a society.

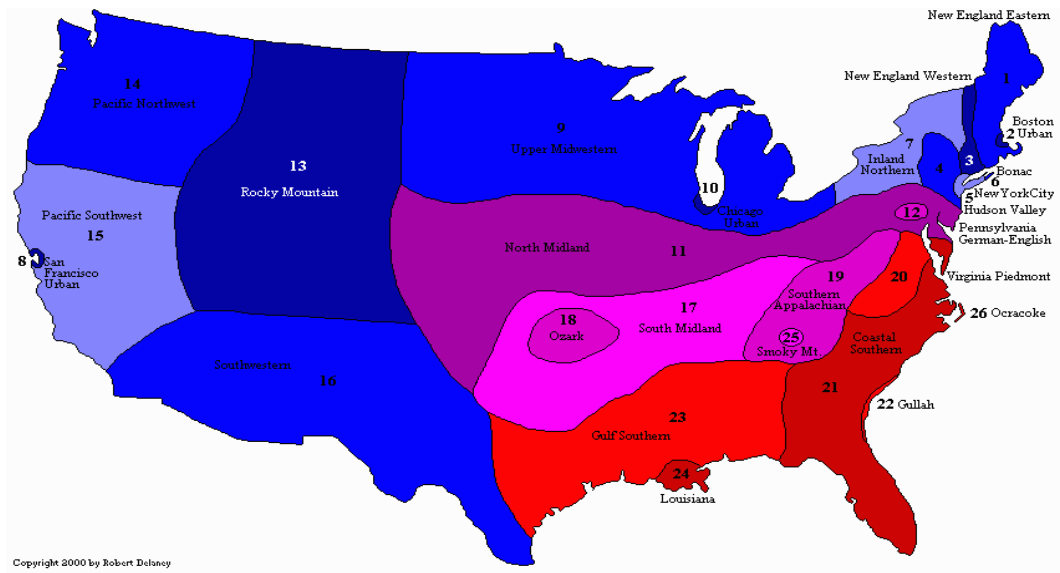


Figure 1. Dialect Map of American English

Note: reprinted from Dialect Map of American English, by Robert Delaney, 2000, retrieved from robertspage.com/dialects.html Copyright 2000 by Robert Delaney.

2.3 Definition of Basic Terms

On the one hand, according to the online Cambridge dictionary, pronunciation means how we say words. Most people speak the dialect of Standard English with an accent that belongs to the part of the country they come from or the area in which they live. Learners of British English commonly hear RP (Received Pronunciation), which is an accent often used on the BBC and other news media and in some course materials for language learners, but it is common to hear a variety of regional accents of English from across the world. Pronunciation is also defined as the making of sound of speech, the way in which a sound (phoneme), word, or language is articulated, especially in conforming to an accepted standard (Encarta Webster’s Dictionary, 2004).

On the other hand, according to the last reference, accuracy can be defined in three ways: 1) freedom from mistake or error (quality or state), 2) ability to work or perform without making mistakes, and 3) the provisioning of information according to accepted standard(s). In this research, the last two definitions are more applicable, since they address

accuracy as an ability and as related to well-known standard(s). In our case, the Standard English will be American English, not only because it is the dominant accent taught in most Latin American universities, majoring English Language, but also because it has undergone minor “unnatural” changes (see 2.1).

From the two previous definitions of pronunciation and accuracy, respectively, a clear idea of the meaning of English Phoneme Pronunciation Accuracy (EPPA) can be stated, as meaning likeness or closeness to the standard American English, which consequently and more importantly implies being intelligible to a native speaker. The closer to the “standard” American English pronunciation, the more accurate the speaker is.

2.4 Spoken Language and Pronunciation Accuracy Precedence

According to Linguists, spoken language is given priority over written language, not only because many languages exist only in spoken form but also because speech is developed first in the individual speaker (Hudson, n.d). Additionally, written languages came to be long after spoken languages did in the history of humankind. In fact, according to the Linguistic Society of America [LSA] (nd), speech can be traced down to human beginnings, probably a million years ago, whereas Sumerians first invented writing in Mesopotamia, around 3200 B.C. This means that if the history of human language were to be represented in a one-hundred-millimeter rule, only the last half of millimeter would represent the length of the written language period.

2.5 Relevant Topics Related to English Vowel Sounds

2.5.1 Accentedness, comprehensibility, intelligibility and their relation with English pronunciation

L2 pronunciation research has experienced a major paradigm shift in its pedagogical practice/goal from nativelike pronunciation (i.e., accent-free speech) to intelligible pronunciation (i.e., accented but understandable pronunciation; Derwing & Munro, 2005; Levis, 2005, as cited both in Suzukida Y, 2017, pg. 10, lines 259-260).

In trying to define comprehensibility, Suzukida (2017) first establishes accentedness as “the listeners’ perception of how close the speaker’s language is to the speech patterns of the target-language community,” thus best described as linguistic nativelikeness. He also mentions, “Comprehensibility is frequently used in L2 pronunciation research as the synonym of intelligibility” (Pg. 11, lines 277-281).

Regarding the role of pronunciation in comprehensibility, Suzukida continues citing and saying:

“Research evidence supports that pronunciation features both segmental and prosodic aspects impact on both accentedness and comprehensibility judgments. Accentedness seems to be strongly associated with segmental accuracy, temporal measures, syllable duration, stress, and pitch range (Anderson-Hsieh, Johnson & Koehler, 1992; Winters & O’Brien, 2013), while comprehensibility is linked to segmental sounds in stressed syllables (Zielinski, 2008), word stress (Field, 2005), primary stress in sentences (Hahn, 2004), tone choice (Pickering, 2001; Wennerstrom, 2001) as well as lexicogrammatical accuracy (Munro & Derwing 1995; Varonis & Gass 1982)” (Pg. 13, lines 300-307).

It is clear that segmental accuracy and stress are the two overlapping factors that influence both accentedness and comprehensibility. A further citation (Koster M. & Cutler A., nd) somewhat agrees with all Suzukida’s citations above as follows: “Studies from English suggest that suprasegmentals play little role in human spoken-word recognition; English stress, however, is nearly always unambiguously coded in segmental structure (vowel quality)” According to these last authors, a link between segmentals and stress is evident.

Contrastingly, researchers such as Kang, Rubin and Pickering (2010), as cited in Kanioková (2014), remark the importance of suprasegmentals factors in judging the speech of non-native speakers during advanced English oral exams. The study found that suprasegmentals measures account for up to 50% of variance in the rating speakers received for proficiency and comprehensibility.

Aside from the previous information belonging to the qualitative domain, recent quantitative investigation, proudly on Spanish-English bilinguals, gives more grounds to the

concepts already displayed, particularly because acoustic measurements took place (see following subheading).

2.5.2 Accent Measurement by Reduced Vowel(s)

According to the fundamentals of English phonology, the reduced, central vowel schwa is an allophone since it undergoes changes according to its phonetical surroundings. Thus, the phonetical characteristics of schwa vary according to preceding consonants. Also, schwa sounds are slightly different in middle and final-syllable position.

However, in a recent study (Byers & Yavas, 2017), it has been established that final-position schwas are more stable regarding formant F1 and F2, related to vowel height (related to mouth openness) and backness (anterior-posterior mouth articulation), respectively. Therefore, final-syllable schwas were used as parameter of accent when comparing three groups, speakers of English: Native English Monolinguals (Ems), Early Spanish-English Bilinguals (EBs), and Late Spanish-English Bilinguals (LBs), being the age range for EBs and LBs of 0-7 and 15-22 years-old, respectively, for the study just cited.

The three groups reported distinct domains, though they all overlap considerably (Fig below). Although not commented or analyzed in the original literature source, it is important to note here that this significant overlap means that a good fraction of Spanish-English bilinguals, either EBs or LBs, are capable to reach native-like levels, at least regarding the schwa sound, though it must also be said that statistically the three groups differ in their mean values, to say the least.

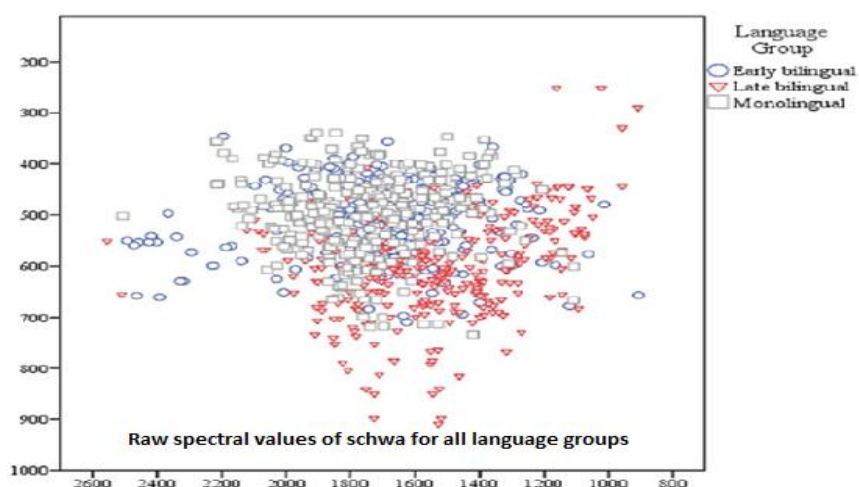


Figure 2. Row Spectral Values of Schwa for All Language Groups

Note: Vowel reduction in word-final position by early and late Spanish-English bilinguals. Reprinted by Byers E. and Yavas M., 2017. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5383264/>

In addition to the universally well-known reduced vowel schwa [ə], two additional reduced vowels [ɪ] and [ʊ], are important to note not only because they are substitutes of schwa in some words but also because they are used to contrast or distinguish similar sounds, seemingly equal (minimal pairs), such in the pair Rosa's and roses, for which the second vowel is [ə] and [ɪ], correspondingly. Informally [ɪ] and [ʊ] are accordingly called schwi and schwu in many internet references, in clear analogy with schwa (Stress and vowel, nd; Well J., 2009; The Elusive Schwa, 2011). Some electronic dictionaries even use non-IPA symbols for these reduced vowels. For example, the Oxford University Press uses the non-IPA compound symbols [ɪ̯] and [ʊ̯] in words that may be pronounced either with the near-close central unrounded vowel [ɪ] or with the schwa. For instance, the word *noted* is transcribed /'nəʊtɪd/. In analogy to the previous phonetic symbol, another non-IPA symbol [ɚ̯] is devised in the same source to represent a vowel that may be either [ʊ] or [ə], to transcribe words like awful as /'ɔ:fʊl/, which means that can be pronounced either way, /'ɔ:fəl/ or /'ɔ:fʊl/.

2.5.3 Comparison of Vowel Phonological Systems of English and Spanish

According to Vergun (2006) “An adult second language learner rarely acquires native-like pronunciation of the L2”. Flege’s (1995) Speech Learning Model provides a framework to study pronunciation change as the L2 is acquired. The model predicts that a learner will perceive and eventually pronounce *new* L2 sounds but will make little modification to sounds that are *similar* to the L1. That is why it is essential to make a comparison between Spanish Vowel Systems (L1), and the English Vowel System (L2) to establish phonological differences. Vergun described these phonological vowel systems as follows:

American English Vowels

The American English vowel system is relatively large, consisting of 16 vowel sounds (depending on the dialect), three of which are true diphthongs. The vowel sounds generally fall into a quadrilateral pattern, with /i/ (beat) and /u/ (boot) forming

the top corners, and /æ/ (bat) and /ɑ/ (pot) the bottom corners. In the American English vowel system, each vowel can be defined by tongue position alone, because the system has no contrast due to lip rounding...The American English vowel system includes diphthongs, which start with one sound and then glide to a second. For example, the pronunciation of the /o/ in coat is [ou] and the /e/ in gate is [ei]. This type of diphthong is considered homogeneous because both phases of the vowel are close in articulatory position and the lip rounding is the same. A second type of diphthong is heterogeneous (or true diphthong). They glide from one sound to the other moving up and across the vowel space. Lip rounding may not be the same in both phases. American English has three such diphthongs: /ai/ (eye); /au/ (cow); and /oi/ (boy) (Roca & Johnson, 1999).

/i/ (<i>beat</i>)
/ɪ/ (<i>bit</i>)
/e/ (<i>bait</i>) usually produced with a glide [eɪ]
/ɛ/ (<i>bet</i>)
/æ/ (<i>bat</i>)
/ɑ/ (<i>cot</i>) in some dialects, /ɑ/ and /ɔ/ have merged
/ɔ/ (<i>caught</i>) in some dialects, /ɑ/ and /ɔ/ have merged
/ʊ/ (<i>book</i>)
/o/ (<i>boat</i>) usually produced with a glide [oʊ]
/u/ (<i>boot</i>)
/ʌ/ (<i>but</i>)
/aɪ/ (<i>bite</i>) a true diphthong
/aʊ/ (<i>out</i>) a true diphthong
/ɔɪ/ (<i>boy</i>) a true diphthong
/ɜ/ (<i>bird</i>) this rhoticized vowel is acoustically identified with the addition of F3
/ə/ (<i>about</i>) found in unstressed syllables, doesn't contrast with the other vowels

Figure 3. Vowels Used by American English Speakers

Note: reprinted from. A Longitudinal Study of the Acquisition of American English Vowels, by Vergun A, 2006. Retrieved from <http://phonetic-blog.blogspot.com/2009/09/weak.html>

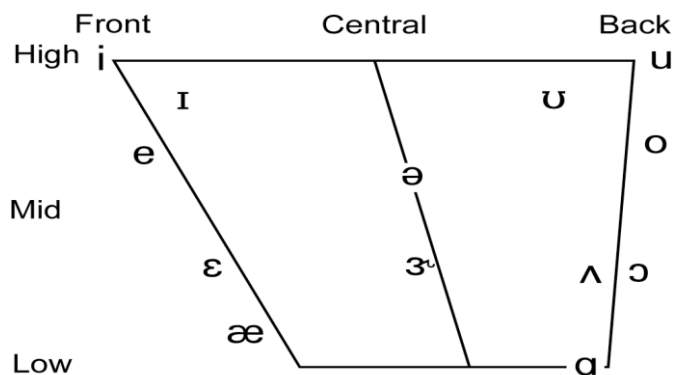


Figure 4. American English Vowel Quadrilateral

Note: reprinted from A Longitudinal Study of the Acquisition of American English Vowels, by Vergun A, 2006, Retrieved from <http://phonetic-blog.blogspot.com/2009/09/weak.html>

Figure 4 above shows the relative positions of 13 American English vowels in the vowel quadrilateral (the steady state onset of /ei/ and /ou/). The vowel list in Table 2.1 and vowel quadrilateral diagram represent a generalization about American English vowels and their pronunciations; however, it must be noted that there are many dialects of American English, and that each dialect has its own acoustic realizations of the vowels, which can vary greatly. Vowel documentation, therefore, which is based on data from specific dialects, is much more useful than referring to a generic “General American” (Hagiwara, 1997).

Spanish Vowels

In contrast to American English, the Spanish vowel system consists of only five monophthongal vowels, which form a vowel “triangle” as shown in Figure 4. Of note, however, are the allophones / ε/ and / ɔ/ which can occur in certain contexts in some dialects (Madrid Servín & Marín Rodríguez, 2001).

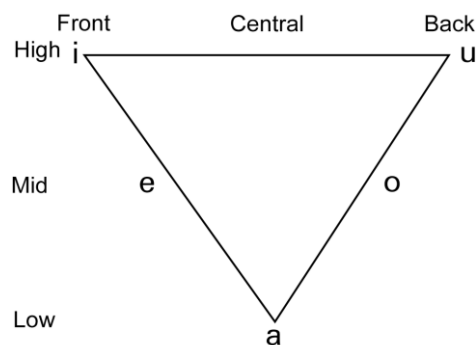


Figure 5. Spanish Vowel Triangle

Note: reprinted from A Longitudinal Study of the Acquisition of American English Vowels, by Vergun A, 2006, Retrieved from <http://phonetic-blog.blogspot.com/2009/09/weak.html>

Each vowel is pronounced as a short, tense ([+ATR]) monophthong. The tongue holds its position without tendency toward diphthongization or gliding, and the vowels are

never reduced to schwa in unstressed syllables. Although there are just five vowels in the system, two consecutive vowels are pronounced as a monosyllabic diphthong, resulting in 14 diphthongs (Teschner, 2000). Table 2.2 below lists the vowel sounds available in Spanish.

Monophthongs	Diphthongs	
/i/	/ie/	/ui/
/e/	/ei/	/ue/
/a/	/ia/	/ea/
/o/	/ai/	/ua/
/u/	/io/	/au/
	/oi/	/uo/
	/iu/	/ou/

Figure 6. Spanish Monophthongs and Diphthongs

Note: reprinted from A Longitudinal Study of the Acquisition of American English Vowels, by Vergun A, 2006, Retrieved from <http://phonetic-blog.blogspot.com/2009/09/weak.html>

English	New / Similar	Spanish
i	Similar	i
ɪ	New	—
e	Similar	e
ɛ	New	—
æ	New	—
ɑ	New	—
ʌ	New	—
o	Similar	o
ʊ	New	—
u	Similar	u

Figure 7. New and Similar Vowels, Based on IPA Symbols

Note: reprinted from A Longitudinal Study of the Acquisition of American English Vowels, by Vergun A, 2006, Retrieved from <http://phonetic-blog.blogspot.com/2009/09/weak.html>

The American English vowel inventory is quite large compared to that of Spanish, which provides ample opportunities to test the Speech Learning Model’s hypothesis of acquiring new and similar vowel sounds.

For this study, the vowels /æ/, a new vowel, and /o/ and /u/, similar vowels were investigated.

According to Vergun (2006), master in TESOL, “two years may not be sufficient to show progress in acquiring a new vowel system. A similar study using a longer time frame may provide additional insight into the L2 vowel acquisition process.” So, the time is a predictor of the acquisition of the L2 phonological system since there are “similar” and “new” vowel sounds between Spanish and English. The learner must be aware of the interlanguage process since it is a grammatical system.

2.5.4 Vowel Phonetic Analysis of the 3000 Most Common English Words

The Pearson Longman Publishing Group (2009) also agrees with the previous opinion saying that “learning a language can be exciting, but also sometimes difficult and frustrating because there are so many things to learn and it is difficult to know what to focus on.” This publishing group presented a list of words the 3000 most common English words, which they called “Longman Communication 3000,” based on the statistical analysis of 390 million words contained in the Longman Corpus Network, a group of corpuses or databases of authentic English language.

According to Pearson Longman, with these 3000 words, students of English can communicate effectively in both speech and writing. This means that by knowing this list of words a learner of English can understand 86% or more of what he or she listens or reads. Based on this statistical analysis, researchers consider that exposure must be focus on significant content. First, students must acquire the language to communicate properly and then improve their English skills.

Researchers made a vowel phonological analysis of the 3000 most common English words to obtain reliable data of the occurrence of vowel sounds, based on such a trustworthy corpus of English words. Based on this list of words and the phonemes yielded for them by the Cambridge online Dictionary, the team proceeded to a statistical analysis of the vowel phonemes encountered in these 3000 words. This analysis was of assistance to the researchers as a planning tool, as the percentages of occurrence of vowel sounds were calculated according to the universe of words and to the universe of vowels (Appendix A).

The vowel frequency analysis of the 3000-words corpus revealed that schwa /ə/ is the most common vowel sound, since it appears in the 29.5% of words of the corpus; however, considering shorter-duration schwas, its occurrence percentage increases to 45.6% of the words universe, including normal-duration schwas and shorter duration schwas, known as eluded schwas. Such percentages mean that 3 out of 10 words contain one or more normal schwa(s) and 9 out of 20 words have total schwas, which includes both types of schwas.

According to a YouTube pronunciation video (“El sonido vocal /ə/”, n.d), 1 out of 5 words (20%) contain schwa(s). Though this last figure does not agree with the statistical data calculated by researchers according to the universe of words, it does agree with the calculations according to the universe of vowels (Appendix A), according to which 21.1% of the vowels found in the corpus of words correspond to schwas, as immersed in a universe of vowels instead of a universe of words.

The second most frequent vowel sound in such a corpus is the reduced vowel /ɪ/, which is contained in 27% of the words of the corpus in its simple form, which means, not taking into account the /ɪ/ɪ included in three diphthongs. If taken into account, the /ɪ/ɪ would surpass the /ə/ɪ by far. This is probably why two YouTube pronunciation videos (Vowel Sound /ɪ/, n.d.; “El sonido vocal /ə/”, n.d) even present the /ɪ/ɪ as a little bit more frequent than the /ə/ɪ.

In addition to its great occurrence, /ɪ/ɪ appear in numerous pronunciation pairs: bit/beat, din/dean, fill/feel, grin/green, hip/heap, it/eat, live/leave, mill/meal, sick/seek, sit/seat. For some of these pairs, non-native speakers are intelligible to native ones due to context, different functionality (name, verb, adjective), or opposed meaning for similar function words. For example, since sick and seek are adjective and verb, respectively, there is no way for a native to misunderstand a non-native, even when he/she would not distinctively pronounce this pair. The same can be said for the pair it/eat (pronoun and verb) or the pair din/dean due to their distinctive meaning, despite the two of these last being both nouns. However, there are instances where confusion may arise, as follows:

- Are you guys leaving/living?
- Can you please make or draw a grin/green?
- Take a bit/beat
- Here you have my cup/heart. Can you feel/fill it?

Though the reduced vowel /ʊ/ occurs in only 1.4% of the words, its impact is, by far,

much higher due to its occurrence in modal auxiliaries (should, could, would), in greetings or everyday conversation words (good, sugar, put, look, cook, book), in past or past participle of irregular verbs (stood, took, shook), or in pronunciation pairs (pull/pool, soot/suit). To the researchers' big surprise, examination of online pronunciation videos (Appendix L) revealed that even some modal auxiliaries, verbal forms, and function words belong to a pronunciation pair: should/shoed, could/cooed, would/wooded, look/Luke, cook/kook, stood/stewed, hood/who'd. As with the previous reduced vowel, there are some examples where misperception may arise.

- There is a new cook/kook in town.
- There are many pulled/pooled ropes in the cellar.
- Throw away the soot/suit (The boss giving instructions to a coal worker)

2.6 Pronunciation Problems of Non-native Speakers of English

Linguists can easily predict most of pronunciation problems that second language (L2) learners of English face by contrast of the English phonological system and the phonological system of any other language of origin (L1). Despite the type of mother tongue, any learner of English as a second or foreign language (L2 learner) around the globe seems to face varied problems when trying to produce spoken English. A quick review of some of the phonological systems belonging to the most important or most-spoken languages reveals that the English phonological system is a varied and unique one, so that most of the times any L2 learner worldwide will find his/her mother tongue as lacking segmental (phonemes) or supra segmental characteristics (stress, rhythm, tone, intonation), as compared to English.

For the case of Spanish-speaking learners of English, in general, the entire lists of errors (See heading 2.7 and Appendix B) are representative of the initial and intermediate stages, but not of the advanced period or last three semesters of the major, for which class observations reveal that most pronunciation errors of students narrow down to about half of the list, particularly for Hispanic students according to Peña A., et Al, 2016.

However, English pronunciation issues are not exclusive of Hispanic learners of English. It is appropriate then to compare some worldwide "main languages," other than

Spanish to English, in terms of the main phonological comparative characteristics, not only from a merely theoretical view but also from an empirical view, which is mainly given by the results or key observations of the studies made on English learners, who are natives of these dominant or important languages. Such empirical views shed light on the factors that affect pronunciation accuracy or native-like pronunciation of English. These qualitative or quantitative studies, especially case studies, also reveal that not every pronunciation error, listed by phoneticians or linguists, holds truth for all EFL learners, particularly fourth or fifth-year students majoring English language, for which empirical data reveal that only about 50 percent of phoneme pronunciation listed errors occur.

It is considered that, after English, Chinese and French are the most representative languages by importance degree, mainly due to their economic scale as well as their cultural and scientific contribution, respectively. However, English does not appear at the top of the list according to number of speakers. It is well known, for example, that Standard Chinese is the dominant language worldwide in terms of quantity of speakers (Table 1 below). Writers at some internet sites claim that, against all odds, Chinese Mandarin as the Standard Chinese may replace English and become the Lingua Franca of the 22nd century (Will We All Be, 2015). On the other hand, although French is the ninth most-spoken language worldwide (Table 1 below), it has traditionally been the second language in importance after English, at least as seen from a historical and cultural contribution view. Examples of French-speaking nations are Canada and numerous African countries, where French was imposed as part of the colonization process.

Table 1. The world’s top eight languages (in millions of speakers) according to the respected ethnologue.com.

Language	Total Worldwide	L1 Native Language	L2 Second Language
Standard Chinese	1,026 M	848 M	175 M
English	765 M	335 M	430 M
Spanish	466 M	406 M	60 M

Hindi	380 M	260 M	120 M
Russian	272 M	162 M	110 M
Arabic	354 M	N/A	354 M
Portuguese	217 M	202 M	15 M
French	119 M	69 M	50 M
There is a vast discrepancy among authorities regarding what constitutes “speaking” a language. For example, some claim there are well over two billion people worldwide speaking English, the vast majority of them second language speakers.			

For the sake of literature foundation, in the paper written by Zhang and Yin (2009), they analyzed at least four frequently occurring problems that English learners face in China concerning pronunciation. Factors leading to these problems are: 1) interference of Chinese, 2) learners’ age, 3) attitude and psychological factors, and 4) their insufficient knowledge of phonology and phonetics systems of the English language. Among the psychological factors and attitude, the authors mention motivation, personality, and emotional state.

On the other hand, the Spanish and the French phonological systems, besides lacking some vocal sounds like /æ/, /ɪ/ (short i) and the diphthong /o/, they lack consonant sounds like the glottal fricative /h/ and the dental fricatives /θ/ or /ð/. In addition, the consonants sounds /r/ and /dʒ/ exist in French, but they are articulated differently, particularly because French tends to be more guttural than English. As a result, French learners of English always miss the explosiveness of the English /dʒ/ sound, for which it is necessary to use the frontal parts of the human phonological system or vocal tract.

The phonemes previously mentioned are only seven out of the top ten most frequent errors committed by French, which are listed by some internet sites of American origin (The top Ten, n.d; 10 English Pronunciation, n.d). Another Internet site of British origin (10 Common English, n.d), lists twenty-six common English pronunciation problems faced by Francophones. These figures of twenty-six Francophone errors are even higher than the

nineteen typical itemized English pronunciation errors of the Hispanics (See 2.8, 3rd paragraph).

More importantly, the French stress in words is uniform or flat for all the syllables in a typical French word and the typical French sentence stress has a unique melody in its monotony or flatness (Hudson, J., 2008). For these reasons, spoken English with a French accent is very easy to recognize even for English speakers of Hispanic origin living in the U.S. By the way, (Case, 2012) says that even an English speaker with a strong Spanish accent is much more understandable or intelligible than a speaker with a strong French or Portuguese accent.

2.7 Mother Tongue Interference in Second Language Acquisition

First, we must define what mother tongue is. According to the Cambridge online dictionary, mother tongue is the first language that you learn when you are a baby, rather than a language learned at school or as an adult. Therefore, mother tongue has played a very important role in second language acquisition even when most of the teaching methods used in ESL environments try to prevent learners from using their native tongue.

Yadav (2014) states that there is a “general assumption that English should be learned through English, just as you learn your mother tongue using your mother tongue. But the idea that the learner should learn English like a native speaker does, or tries to 'think in English', is an inappropriate and unachievable thought.”

It is a fact that L1 has an influence in SLA (second language acquisition) either positive or negative as it is a tool that learners use to gather data about L2. Even though native tongue can influence the four macro-skills, speaking is the most affected skill since it determines the accent of learners.

Avery & Ehrlich (1992) claim that the sound pattern of the learner’s first language is transferred into the second language and is likely to cause foreign accents. The mispronunciations of words by nonnative speakers reflect the influence of the sounds, rules, stress, and intonation of their native language (as cited in Gilakjani, Ahmadi, and Ahmadi 2011, p. 5).

Avery and Ehrlich point out that the sound system of the native language can influence the learners' pronunciation of a target language in at least three ways. First, when there is a sound in the target language which is absent from the learners' native sound inventory, or vice versa, learners may not be able to produce or even perceive the sound(s). Second, when the rules of combining sounds into words (i.e., Phonotactic constraints/rules) are different in the learners' mother tongue from those of the target language, they cause problems for learners because these rules are language specific as they vary from one language to another. Thirdly, since the rhythm and melody of a language determine its patterns of stress and intonation, learners may transfer these patterns into the target language (as cited in Gilakjani, 2011, p. 5).

In summary, there is clear evidence of the influence that mother tongue has in English pronunciation and learners who are eager to acquire a native-like pronunciation must be aware of the differences between L1 and L2's phonological systems.

2.8 Nature of Pronunciation Problems of Spanish-Speaking Learners of English

Pronunciation problems of non-native speakers of English are diverse and their nature largely depends on the type of native language (L1). It has not been written so much about Spanish speakers learning English in EFL settings (English as a Foreign Language) because most of the research studies are conducted in developed countries, implying ESL contexts. Students immersed in an ESL setting (English as a Second Language), unlike EFL settings, have the opportunity to be exposed to the target language (L2) intensively every day.

Not surprisingly, one of the few articles written for an EFL environment (Case, 2012) explains the English pronunciation problems faced by Hispanic learners just by analyzing the nature of the Spanish Phonological system and its contrast to the English Phonological system, particularly emphasizing what the Spanish system lacks or what it abounds as compared to the English system. The type of pronunciation problems given below follows the classification given by Case in an article published on the Internet for TEFL.net. The researcher summarizes six types of pronunciation problems for Hispanic natives, which in prioritized

order are problems with: vowels, consonants, number of syllables, word stress, sentence stress, and intonation.

Another article published by English Speak Like a Native [ESLAN] (n.d) provides a more detailed, structured and exhaustive compilation of 19 errors made by Hispanic speaker learners of English. Along with the compilation, such a reference provides important articulation keys for English sound production, which every Spanish-speaking learner of English should know. However, on the one hand, despite this enormous contribution, this paper focuses on phonemes only, disregarding the rest of important phonological characteristics, mentioned in the previous paragraph. On the other hand, observation of advanced college students of English allows estimating that these 19 items or categories of pronunciation errors may be valid for beginners or intermediate English students.

However, according to raw data gathered in this study, it is reckoned that, for advanced learners, the complete list may narrow down to approximately 10 itemized pronunciation errors. Given its operational importance for any research, this list of 19 errors (ESLAN) is given in Appendix B. The classification of pronunciation errors of Hispanic learners given by Case (2012) follows in the next six indented subsections (2.8.1 to 2.8.6):

2.8.1. Vowel Pronunciation Problems

Short and long vowel pairs

Perhaps the single biggest pronunciation problem for Spanish speakers is that their language does not have a distinction between short and long vowels. They often stretch all vowel sounds out too much and confuse pairs of short and long English vowel sounds like “ship” and “sheep” both in comprehension and speaking. Relevant pairs include these four categories:

bit/beat; not/note and not/nought; batter/barter; pull/pool.

As the pairs above are all pronounced with different mouth positions as well as different lengths, focusing on that can help students distinguish between the minimal pairs above even if they do not fully get the hang of vowel length.

Other vowels pronunciation problems

In common with most learners, Spanish speakers find the distinction between the very similar sounds in “cat” and “cut” difficult to notice and produce. Perhaps more importantly, they can also have problems with the two closest sounds to an “o” sound in “not” mentioned above, making “boat” and “bought” difficult to distinguish. The unstressed schwa “er” sound in “computer” does not exist in Spanish, and neither do the closest long sounds in “fur” and “her”. Spanish speakers tend to find it much more difficult to recognize not rhotic versions of vowel sounds.

In addition to vowel pronunciation problems, Case (2012) has described consonant pronunciation problems:

2.8.2. Consonant Pronunciation Problems

Words written with “b” and “v” are mostly pronounced identically, making this perhaps the most common spelling mistake in Spanish. There is also no distinction between the first sounds in “yacht” and “jot” in Spanish and which of those two sounds is perceived by English speakers tends to depend on the variety of Spanish spoken (this being one of the easiest ways of spotting an Argentinean accent, for example). There may also be some confusion between the first sound in “jeep” and its unvoiced equivalent in “cheap” (a common sound in Spanish).

The “ch” in “cheese” may also be confused with the “sh” in “she’s”, as the latter sound does not exist in Spanish. The difference is similar to that between “yacht” and “jot” mentioned above, being between a smooth sound (sh) and a more explosive one (ch), so the distinction can usefully be taught as a more general point. Alternatively, the “sh” in “sheep” may come out sounding more like “s” in “seep”, in which case it is mouth shape that needs to be worked on.

Spanish words never start with an “s” sound, and words which are similar to English tend to have an initial “es” sound instead, as in *escuela*/school. This is

very common in Spanish speakers' pronunciation of English as well, leading to pronunciations like "I am from Spain". Spanish speakers have no problem producing a hissing sound, so the secret is to have them make the word directly after that "ssss" and then practice reducing the length of that down to a short initial "s".

Unlike most languages, the "th" sounds in "thing" and "bathe" do exist in Spanish. The problem with "bathe" is that the sound is just a variation on mid or final "d" for Spanish speakers and so some work on understanding the distinction between initial "d" and initial "th" is usually needed before it can be understood and produced in an initial position – in fact making the amount of work needed not much less than for speakers of languages entirely without this sound. The problem with "thing" and "sing" is different as it is a distinction that exists in some varieties of Spanish and not others, meaning that again for some speakers practice will need to start basically from zero.

Some speakers also pronounce a final "d" similar to an unvoiced "th". "d" and "t" can also be a problem at the end of words, as can "thing"/"think" and sometimes "thing"/"thin" or even "ring" and "rim". In general, Spanish consonant sounds vary more by position than English consonants do.

Although a "w" sound exists in Spanish, it is spelt "gu" and can be pronounced "gw", sometimes making it difficult to work out if a "g" or "w" is what is meant.

As a "z" is pronounced as "s" or "th" (depending on the speaker, as in the two pronunciations of "Barcelona"), a "z" sound does not exist in Spanish. However, perhaps because not so much air is produced in a Spanish "s" I find that this version rarely produces comprehension problems.

Although a Spanish "r" is different from most English ones, it rarely causes comprehension problems. However, the English "r" can seem so soft to Spanish speakers that it is sometimes perceived as "w".

The Spanish “j” in José (similar to the Scottish “ch” in “loch”) and the English “h” in “hope” rarely if ever cause communication problems, but is perhaps the main thing to work on if students are interested in accent reduction. An English “h” is like breathing air onto your glasses so you can polish them, and students can actually practice doing that to help.

Spanish doesn’t have the soft, French-sounding sound from the middle of “television” and “pleasure”, but this rarely if ever causes comprehension problems.

Aside from the problems with specific phonemes, Case (2012) compiled other types of problems faced by the Hispanic community when producing spoken English as follows:

2.8.3. Number-of-Syllables Pronunciation Problems

Particularly when it comes to final consonant clusters in English, Spanish-speakers can suffer both from adding extra syllables (e.g. three syllables for “advanced” with the final “e” pronounced) and swallowing sounds to make it match the desired number of syllables (e.g. “fifths” sounding like “fiss”). With words that are similar in Spanish and English, they can also often try to make the English word match the Spanish number of syllables.

2.8.4. Word-Stress Pronunciation Problems

Trying to make Latinate words in English match Spanish pronunciation is also true for word stress. There is also a more general problem that Spanish, unlike English, has a pretty regular system of word stress.

2.8.5. Sentence-Stress Pronunciation Problems

Spanish is sometimes described as a “syllable-timed” language, basically meaning that each syllable takes up about the same amount of time. This means that the English idea of unstressed syllables and weak forms being squashed in between stressed syllables doesn’t really exist in Spanish. This can make it difficult for Spanish speakers to pick out and point out the important words in a sentence.

2.8.6. Intonation Pronunciation Problems

Spanish speakers, especially males, can sound quite flat in English, and this can cause problems in formal situations and other times when polite language is needed (especially as Spanish speakers also have other problems with polite language such as over-use of the verb “give”).

2.9 Personal (Internal) and Environmental (External) Factors that Influence Pronunciation Problems

Only few descriptive studies and case studies have been carried out to determine the external and internal factors that ultimately influence the quality of the final output, which is English pronunciation accuracy, for which both factors function as an input. Macaro (2010), as well as Lightbown & Spada (2013) summarize a well-structured classification of such external and internal factors that influence the acquisition of a second language (Appendix C). They define the internal factor as those inherent to the individual, which the student brings to a particular learning situation, listing three factors: age, personality, and intrinsic motivation. Some experts even mentioned that gender could play as well an essential role in students' pronunciation accuracy. External factors are those that characterize a particular learning situation and are listed as culture and status, extrinsic motivation, and access to native speakers. The external factors are also called environmental factors.

2.9.1 Age

Although age could be considered as a determining factor in second language acquisition (SLA), experts all over the world have different perspectives on the matter; and many books and articles have shown opposing results regarding the effect that age has on SLA.

Guatsi (2002) states that acquiring a language (native or foreign) is a natural achievement for children and becomes more difficult as one becomes older. Lenneberg (1967) pointed out that a complete development of a language is possible only if it is acquired before puberty.

This supports the hypothesis of a “Critical Period”, where older learners are relatively incapable of acquiring a native-like pronunciation. Experts, as Lenneberg, have established that this period ends around puberty. Thought, other linguistics as David Singleton makes a deep analysis on the opinions of those who side with the critical period hypothesis, as there is no solid scientific evidence of its existence in our brains.

Other points of view divide the second language acquisition into different categories. As young learners could generally develop a better pronunciation, adults’ grammar knowledge and vocabulary could be wider.

Kassaiian (2011) mentioned the contrasting advantages that children and adult learners have when acquiring a second language taking into account the perspective of different experts in the topic, as follows:

A. Child Advantage

Regarding the relationship between age and pronunciation, several studies give advantage to children. Oyama (1976) found evidence for the advantage of children over adults in second-language learning. He stated that pronunciation is achieved better at earlier ages. Cochrane and Sachs (1979) made a comparison between children and adults on imitation of Spanish words and found children to be superior in imitative tasks and suggested that they may possess some special aptitude for phonological acquisition. Guiora, Brannon, and Dull (1972) believe that children’s advantage over adults is due to the fact that they do not consider trying new sounds a risk and are not so worried about social acceptance by peers, while adults feel more at home with their established native language and have stress when trying to speak a foreign language (FL) at the prospect of sounding foolish.

B. Adult Advantage

A number of studies regarding the relationship between age and pronunciation give advantage to adults. Stern (1976) believes that adult cognitive ability to reason is more important than advantages children appear to have in pronunciation. Asher and Price (1967) suggested an advantage for adults believing that the hierarchical nature of process would be more easily understood by mature adults rather than by children.

A study conducted by Snow and Hoefnages-Hohle (1978) did not support the “critical age” theory; in fact, the older group performed better than the younger children.

Rosenman (1987) concluded in his study that young English speaking adults discriminate and are able to reproduce Spanish sounds better than children. Neufeld (1979) argued that he was able to teach second language learners to perform like natives on certain tasks after specialized training.

A number of studies over the past ten years (Birdsong, 1999; Bongaerts, 1999; Marinova-Todd, Marshall & Snow, 2000) have observed native like attainment among late learners (i.e., people immersed in the second language (L2) in their early teens and beyond.). Hudson (2000) has assumed two main versions of the critical period hypothesis for language learning: the “maturation” and “exercise” version. According to the exercise version, he believed, adults should be as able as children, at least biologically, to learn languages.

Scientific measurement has also proved recently that either early or late Spanish-English bilinguals can achieve similar length of vocalization when it comes to schwa (Byers & Yavas, 2017). As in the figure 8 below, which shows that even though late bilinguals (LBs) exhibit a higher average of schwa duration than early bilinguals (EBs), there are many late bilinguals that achieve a very short schwa duration of about 0.09 seconds, being the shortest measurement of about 0.06 seconds for English monolinguals.

The age range for EBs and LBs is of 0-7 and 15-22 years-old, respectively, for the study just cited. Essentially, the shorter the schwa duration, the closer the L2 acquired pronunciation is to the native, L1 pronunciation.

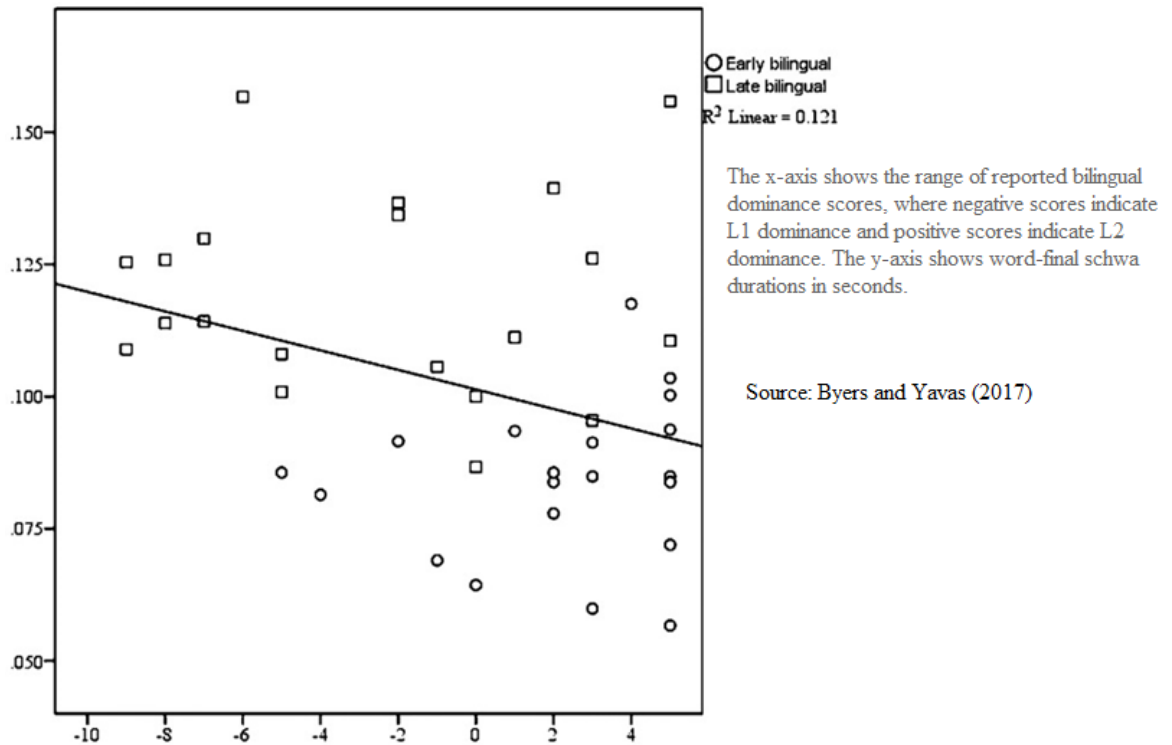


Figure 8. Early age of L2 learning predicts higher bilingual dominance scores and lower word-final schwa durations. Note: Vowel reduction in word-final position by early and late Spanish-English bilinguals. Reprinted by Byers E. and Yavas M., 2017. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5383264/>

For the current study, age, though descriptively analyzed, it is not quantitatively or correlational considered as a personal sub-variable or indicator for two main reasons. First, 95% of the sample is homogeneous according to age. Second, the average age is about 22 years, so that the young-adult students that constitute the sample are beyond the critical period of puberty or adolescence.

For other authors, language learning follows different patterns depending on the starting point. Archibald and his research team (as cited in Eaton, 2016) stated that “If second-language acquisition begins at age 5, it follows a different pattern than when second-language acquisition begins at age 15 or at age 25.” Note that these researchers did not establish a distinct learning according to age; they just stated a different mental and cognitive pattern depending on the starting age.

For this research, mean age was computed for male and female subgroups of each of the two original populations addressed, for which mean pronunciation grades at the written

test and GPAs were also calculated. Despite the small differences, ranging from 0.2 to 0.5 years of age differential, the lower the subgroup mean age the better it relates well with both: somewhat higher mean pronunciation grades and slightly higher GPAs throughout the major of the respective subgroups, for the three populations mathematically experimented, two original and a third one resulting from uniting those two. See end of 2.9.2 and Appendix I for more detailed data and explanations.

2.9.2 Gender

Even though several studies have been conducted to find a link between gender and Phoneme Pronunciation Accuracy, the results have not shown a fundamental correlation. For example: Walker and Perry (1978) reported that gender was not found to be a significant learner characteristic among 18 to 22-year-old French-speaking Canadians learning English.

Byrd (1992) discusses vowel reduction, which is known to be affected by speech rate. Her experiments show that men, who speak faster, tend to reduce their vowels to schwa more often than women (as cited in Jahandar, S, Khodabandehlou, M, Seyedi, G, & Dolat, R 2012, p.2). Yet, speaking fast do not mean to have a native-like pronunciation, but women and men can improve their pronunciation accuracy by practice.

Jahandar, Khodabandehlou, Seyedi & Dolat (2012) concluded that *gender does not affect pronunciation accuracy of learners considerably and the pronunciation accuracy of vowels for both male and female is not of significant difference and is almost the same. Meanwhile, female outperform male subjects in producing accurate consonants, but it is not significantly noticeable to result in complete superiority of female over male subjects.*

Summarizing, there is no clear or decisive evidence in the technical literature regarding gender as a determining factor in English pronunciation accuracy, but the researchers contrasted this information with the results of this investigation, from which one can infer that these apparent opposing results in the background literature may obey to statistical skewness due to sample sizes not large enough.

In this study, for the fifth-year population of 45 university students, majoring English Language, 18 males and 27 females, using a scale from 0 to 10, males obtained a group

average advantage of one point in the written test that assessed vowel pronunciation. Considering the average grade of around 5 points for the population, such an advantage represents 20% superiority for the boys 'group, who were also 0.5 younger than the girls ' group, when starting university .

However, for the fourth-year population of 50 university students, 15 masculine ones and 35 feminine ones, Girls, who were 0.2 years younger, got 0.2 points more than boys. To overcome this seeming controversy between populations and given their equal level of English pronunciation (4.1.3), they were united in a single, more reliable sample size of 95 students, for which males obtained again an advantage of 0.4 points over females, resulting the males ' group again 0.2 years younger than the females 'group. Appendix I offers more detailed information and tabulated data on this regard.

2.9.3 Extraversion / Introversion

Many researchers have investigated the possible relationship between introversion/extroversion and second language learning, especially regarding English Pronunciation Accuracy. These studies have been conducted to try to explain the correlation between personal factors, in this case, extraversion/introversion and its relationship with English pronunciation. For example, Hassan, (2001) studied “The relationship between both extraversion/introversion and gender to pronunciation accuracy of English as a foreign language.” In this investigation, a “developed introversion scale and an English pronunciation accuracy test” were used.

The researcher took his subjects from third-year English language specialists (16 males and 55 females) enrolled at the English Department, College of Education, Mansoura University, and he found that:

- a) Extraversion and introversion is positively correlated with English pronunciation accuracy among Arabic speaking Egyptian college students;
- b) Male students outperformed their female counter parts in their performance on the Pronunciation Accuracy Test; and,
- c) Extraverted students were more accurate in their English language pronunciation than introverted ones.

Largely, his study has provided important information concerning extraversion-introversion to help in language learning. In this study, extraversion-introversion “was found to be a significant predictor of pronunciation accuracy in English”. This study has been part of the many studies that have made important contributions to understand these personality variables (extraversion-introversion) and the correlation between pronunciation accuracy). Continuing with the information provided by Hassan (2001), he cites many other authors, as follows:

Rossier (1975) attempted to determine whether introversion/extraversion was a significant variable in the learning of English as a second language by Spanish speaking high school students in the United States. A positive correlation was found between extraversion and oral English fluency as judged by three raters when variables representing the written aspects of English and the length of stay in the United States were controlled.

In a 1982 study by Busch, he explored the relationship between the extraversion-introversion tendencies of Japanese students and their proficiency in English as a foreign language (EFL). It was hypothesized that in an EFL situation, extraverted students would attain a higher proficiency in English because they may take advantage of the few available opportunities to receive input in the language. To test the hypothesis that extraverts are more proficient in English, 80 junior college English students and 105 adult school English students took a standardized English test and completed form. In addition, 45 of the junior college students participated in English oral interviews which were then rated for proficiency by two evaluators.

The hypothesis that extraverts are more proficient in English was not supported. Statistical analysis revealed that extraversion had a significant negative correlation with pronunciation, a subcomponent of the oral interview test. In addition, introverts tended to have higher scores on the reading and grammar components of the standardized English test. Even though introverts tended to score better on most of the English proficiency measures, it was found that junior college Japanese males who had

tendencies towards extraversion had higher oral interview scores, except for the pronunciation subcomponent of this oral interview measure.

Using the Eysenck Personality Inventory to measure the extraversion-introversion tendencies of junior and senior high school students, Naiman, Frohlich, Stern, and Todesco (1978) found no significant correlations between extraversion and L2 proficiency as measured by a battery of standardized tests. They did, however, find that certain types of extraverted behavior, such as calling out answers and handraising, correlated positively with L2 proficiency

In (McCaulley and Natter, 1980; Myers and Myers, 1980) Personality is considered important to language learning because it influences the way people learn and what they learn (as cited in Hassan, 2001, p.3)

A 1968 study by Eysenck and Eysenck found the behavioral differences are such that extraverts seek out the presence of other persons, enjoy social activities and talking, tend to act aggressively and impulsively, and crave excitement. On the other hand, introverts learn social inhibitions since social situations are most likely to be over stimulating for them. They tend to be introspective, reserved, unimpulsive, unaggressive, and prefer reading to talking to people.

According to Moody (1988), extraverts tend to be outgoing. Their interests flow exuberantly to the outer world of actions, objects, and persons. In contrast, introverts are more restrained, focusing mainly on the inner world of concepts and ideas.

Extraversion vs. introversion is a significant dimension of style that particularly influences classroom management, especially grouping of students (Oxford and Anderson, 1995). Extraverted learners gain their energy and focus from events and people outside of themselves. They enjoy a breadth of interest and many friends, and they like group work. Extraverted students enjoy English conversation, role plays and other highly interactive activities. Introverted learners, on the other hand, are stimulated most by their own inner world of ideas and feelings. Their interests are deep, and they have fewer friendships than extraverted students (but often strong ones). They prefer to work alone or else in pair with someone they know well, they dislike

lots of continuous group work in the language classroom. With introverted students, it is often useful to employ the 'think-pair-share' sequence, in which the student gradually eases into group work (Oxford and Anderson, 1995).(as cited in Hassan 2001)

From the above studies, Hassan concludes: first, two studies (Naiman et al, 1978, and Busch 1982) did not establish any significant correlation between extraversion and second language proficiency. Although Rossier (1975) found a positive correlation between extraversion and oral English proficiency.

Most recently, Hassan (2001) found that, “Extraversion and introversion are positively correlated with English pronunciation accuracy among Arabic speaking Egyptian college students”. Finally, a 1968 study by Eysenck and Eysenck, Moody (1988), Oxford and Anderson, (1995) (cited in Hassan 2001) established behavioral differences, and interests between introverted and extroverted students and the relationship/influence on pronunciation accuracy, language proficiency and so on.

In summary, according to the studies cited in Hassan (2001), there is a positive correlation between extraversion/introversion and the development of English pronunciation accuracy. It is possible, then, to measure these variables by making use of some questions based on the characteristics of an introverted/extroverted student given in Hassan’s investigation.

In the present study, using the same united sample of 95 fourth-and-fifth year university students, majoring English Language, the research team found a positive correlation between some degree of introversion/extroversion and vowel pronunciation, though none of the two categories, introverts or extroverts, outperformed the other.

Regarding the vowel pronunciation performance distribution along the introversion-extroversion scale, a peak asymmetrically located near the center of a scale from 5 to 10, where 5 means a neutral or balanced introvert-extrovert and 10 becomes the extremely introverted or extroverted students. Both personality poles (introversion/extroversion) were put in the same extreme for simplicity and because their overall mean grade is equal. However, grading according to the introversion-extroversion degree, the maximum grades correspond to the two strata located between 6 and 7 point of introversion-extraversion. Defined in a synthetic way, neutral (from 5 to 6) or extreme- approaching students (8 to 10) attained lower grades. Mathematically speaking, this type of behavior from this subvariable

induced the correlation graphs to **nonlinearity** for having its maximum somewhere along the scale instead of one of its extremes (see I-2, Appendix I).

2.9.4 Motivation

According to Anjomshoa and Sadighi (2015), motivation is an issue worthy of investigation because it seems implicated in how successful language learners are. And motivation is the answer that researchers and teachers provide when regarding to efficient language learning. For decades, studies in this area have been primarily concerned with describing, measuring and classifying its role in theoretical models of the language learning process (Ushioda, 1996, as cited in Anjomshoa and Sadighi, 2015). Most teachers and researchers have widely accepted motivation as one of the key factors which influence the rate and success of second/foreign language learning. Moreover, motivation provides the primary impetus to initiate learning the Second Language and later the driving force to sustain the long and tedious learning process; indeed, all the other factors involved in second language acquisition presuppose motivation to some extent (Dörnyei, 1998, as cited in Huang 2007(Anjomshoa and Sadighi, 2015)).

Anjomshoa and Sadighi explained that motivation determines the extent of active, personal involvement in learning the target language; research shows that motivation directly influences how often students use target language learning strategies, how much students interact with native speakers and how long they persevere and maintain second language skills after language study is over (Oxford & Shearin, 1994, as cited in Huang 2007 (Anjomshoa and Sadighi, 2015)). Conversely, without sufficient motivation, even individuals with the most remarkable abilities cannot accomplish long-term goals, and neither are appropriate curricula and good teaching enough on their own to ensure students achievement (Dörnyei & Csizér, 1998, as cited in Huang 2007 (Anjomshoa and Sadighi, 2015)).

Gardner (1982), defined motivation as composed of three elements; effort (the time spent studying and the drive of the learner), desire (the yearning to become proficient in the language) and affect (the emotional reactions of the learning towards studying). Thus, it could be defined as the various purposes that are part of the goals to learn a second language. Motivation is divided into two types according to Gardner in relevance with second language learning: integrative and instrumental.

Integrative motivation is related with the positive attitude of the students towards the target language and the desire to become proficient speaker, in other words, what comes from the inside, also sometimes mistakenly known as intrinsic motivation. On the other hand, instrumental motivation, sometimes paralleled to extrinsic motivation, deals with external rewards, social or economic benefits through the second language acquisition.

Extrinsic and instrumental motivations are similar but not exactly alike. Extrinsic focuses on the fact that the reason is outside of a person, while instrumental is about the purpose of her/his learning. Intrinsic and integrative motivations are also different because intrinsic motivation has to do with what makes someone feel good while integrative motivation is about membership in a language community. The point worthy of mention is that during the lengthy process of learning, motivation does not remain constant. It becomes associated with mental processes and internal, external influences that the learner is exposed to. In other words, time is considered an important aspect in the nature of learner's motivation. "Motivation does not necessitate choosing either integrative or instrumental motivation. Both types are important. A learner might learn an L2 well with an integrative motivation or with an instrumental one, or indeed with both" (Cook, 1991). In a second language environment with many deficiencies, motivation can be a determinant factor between failure and success.

Moreover, the researchers Carrió-Pastor and Mestre Mestre (2014) concluded that while both integrative motivation and instrumental motivation are essential elements of success, it is the integrative motivation which has been found to sustain long-term success when learning a second language (Taylor, Meynard, and Rheault, 1977; Ellis, 1994; Crookes & Schimdt, 1991, as cited in Carrió-Pastor and Mestre Mestre, 2014). In some of the early research about motivation, integrative motivation was viewed as being of more importance in a formal learning environment than instrumental motivation (Ellis 1994). In later studies, integrative motivation has continued to be emphasized, although now the importance of instrumental motivation is also stressed. However, it is important to note that instrumental motivation has been acknowledged as a significant factor for the group of students interested in specific language learning, whereas integrative motivation is linked to general second language acquisition. It has been found that generally students select instrumental reasons more frequently than integrative reasons for the study of a specific language.

In this study, the students that support an integrative approach to language study are usually motivated to a greater degree to learn a second language and they are overall more successful in language learning. They plan their language learning and repeat exercises that consider relevant; meanwhile the students who preferred instrumental motivation are more interested in communication than in leaning the target language.

For the present study, since English pronunciation learning is a long-term process, the research team considered instrumental motivation as being more influential than instrumental motivation. In fact, numerically and experimentally speaking, they found that correlation graphs between Personal Factors and EPPA are improved from 5% to 10% in their correlation coefficients when assigning a higher weight to integrative motivation, as compared to instrumental motivation, specifically when given it twice as much.

Also, following Gardner's breakdown of motivation (1982) into three main elements, effort, desire, and affect, data on English exposure time (hours/week), desire of achievement (i.e. native-like English pronunciation, future studies in the US), and affect (impacting icons of American culture) were tabulated, most of them collected by means of open questions. Since there was no more room left in a lengthy questionnaire-survey, the last two elements of motivation were not sufficiently measured and consequently they were not mathematically processed entirely, as by using comparable scales ofr the three elements. However, expressed in qualitative terms, passing-grade students were linked to a good-enough exposure, above the group mean, as well as to a higher affectional score on US cultural aspects, particularly to music in a superlative degree.

Last but not least, from the 14 passing-grade students, out of 95, only two did not report the use of radio stations or music applications as part of their exposure. The remaining 12 students were accurately able to recall and list not only three or more songs 'titles but also their respective singers, along with the dials of radio stations and music applications names (Youtube, Spotify, Deezer, MP3DX, i tunes, etc.). In fact, the two students with the highest grades, in addition to their considerable exposure, they were able to list fully, giving names and authors and the greatest number of songs, sometimes the latest ones, as fresh as one month. Regarding nonpassing-grade students, a direct proportion was observed between their vowel pronunciation grade and the elements defined in the previous paragraph. Though not

done here, a quantitative analysis can be conducted by building a similar scale for effort, desire, and affect.

2.9.5 Amount of Exposure

Another factor is the amount of exposure to English the learner receives. It is tempting to view it simply as a matter of whether the learner is living in an English-speaking country or not. If this is the case, then the learner is ‘surrounded’ by English and this constant exposure should favor the development of his/her pronunciation skills. If the learner is not living in an English-speaking environment, then there is no such advantage. Nevertheless, it is obvious that we cannot talk simply in terms of residency. Many learners live in an English-speaking country, but spend much of their time in a non-English-speaking environment (for example, a language other than English is used at home).

Conversely, many people live in non-English-speaking countries but use English in many areas of their lives, such as work or school. In such complex bilingual and multilingual situations it is difficult to get an accurate picture of how much exposure to English a learner has received, and of what kind. In addition, it is not merely exposure that matters, but how the learner responds to the opportunities to listen to and use English. Various studies have compared the pronunciation accuracy of people living in an English-speaking country and those who are not, and it seems that amount of exposure, though clearly a contributory factor, is not a necessary factor for the development of pronunciation skills, Kenworthy (1987).

It is well known, for example, that being surrounded by a language helps to acquire it, but the attitude towards the language is a good indicator of the success of the process. An extrovert person may be willing to immerse himself into a new language world without any fear. This may be the case of an introvert person who generally face the situations more cautiously. Tomlinson & Allan (2000) explain that besides the exposure to a language, there must be interest and motivation to learn a language. Personal and environmental factors are important to a language acquisition. Students should be intrinsically motivated to continue learning and improving their knowledge, no matter whether they are exposed to a rich English environment or not. Kennedy (1973) explains that the L2 learner is practically a “part-time learner” and time he spends enriching his second language is critical.

In a case study conducted in Minnesota by Singer (2006), four Somali immigrant students of English volunteered to contribute in a two-tiered research, which explored into their lives and their English pronunciation skills. It was determined that among the external factors, the magnitude of the percentage of daily exposure of the last two years is the best predictor for pronunciation skills, more than the historical exposure after living near a decade in the US but with a lower daily exposure percent (compare Farah and Mohamed in Table 2 below). Among the internal factors, the individual's attitude toward English pronunciation and motivation are also sound causes of pronunciation accuracy. Though the volunteers were not of Hispanic origin, the results of the study could still be extensive to others ethnicities or nationalities, because universal variables (daily exposure, motivation) were explored.

In such a study, other external or environmental factors, like residence time in the US, which initially appeared to be promising, proved to be lagged off to a second place in connection to English pronunciation accuracy (dependent variable). Meanwhile, the main personal factors that proved a direct link to the dependent variable were motivation and student's attitude toward English pronunciation. For this reason, questions regarding information on individuals' personal background were of considerable importance for the study. To measure the dependent variable of pronunciation, formal and informal conversations with the four volunteers were recorded. To measure or estimate de independent variables (environmental and personal factors), questionnaires were used. Table 2 shows personal information and Table 3 summarizes the weighed results, with the highest composite score of 20 for Farah (last column), who along with Asha got the highest attitudinal speech score of 45. However, because Asha was not as exposed to English every day as Farah, she got only 13 as the total score.

Table 2. Participant Information

Name	Gender	Age	Years in the U.S.
Mohamed	Male	31	10
Abdi	Male	34	5
Farah	Female	34	2

Asha	Female	26	4.5
Source: Singer, J. (2006). Uncovering Factors That Influence English Pronunciation of Native Somali Speakers.			

Table 3. Participant information and results from Personal Information Survey (PIS) and speech samples

Names	# of years in US	% of day in English	Attitude Speech (PAI)	Sample Total
Mohamed	10	50%	37	13
Abdi	5	30%	37	8
Farah	2	55%	45	20
Asha	4.5	40%	45	13
SOURCE: Singer, J. (2006). Uncovering Factors That Influence English Pronunciation of Native Somali Speakers.				

2.10 English Pronunciation Teaching

The Communicative Language Teaching (CLT), which was created for ESL contexts, is currently also used in EFL contexts; thus, the CLT approach is commonly used not only at “Universidad de El Salvador (UES)”, but also worldwide as cited below. According to some researchers, this approach, though theoretically good, is generally difficult to be brought to practice in EFL contexts and its general theory does not provide guidelines for pronunciation teaching. Koosha and Yakhabi (2013) list no less than eight typical problems EFL teachers face in trying to apply the general CLT.

Among the practical CLT inconveniences, there are at least five outstanding ones of potential relevance in our national reality: the existing cultural values in EFL contexts, EFL learners’ needs, and their lack of intrinsic motivation due to the absence of real need for daily use of the language. In addition, CLT activities are more difficult to design and implement,

especially in large-class groups. Additionally, assessment becomes very difficult because teachers are used to plan clear-cut tests.

Regarding the pronunciation domain, it is until recently that some research has been carried out in Finland to devise pronunciation teaching activities compatible with the general principles of the CLT approach (Tikkakoski, 2015). However, this Bachelor's thesis research seems to be the first of its kind and therefore an exploratory study, which provides "beginnings rather than finished recommendations," according to the author's own concluding words.

Another research conducted in the same nation, Tergujeff (2012a), as cited in Tikkakoski (2015, p.6), provides though revealing data. The majority of the teachers participating in such a research devoted 25% of their time for pronunciation teaching. Also, the rate of EFL teachers that use online materials, often or sometimes, for teaching pronunciation has increased from 53% to 81%, from 2008 to 2012, as cited in Tikkakoski, (2015, p.7). Contrary to these positive data, Tergujeff (2012a) speculated that pronunciation teaching had change for the worse in Finland, mainly due to three factors: "The rise of English as a global language, the rise of CLT as a teaching method, and the overall decrease of teaching of phonetics in Finnish universities."

Consistent with the previous speculations, the local or national knowledge on the CLT approach yields similar conclusions. For example, because of the teaching-learning process of taking three Didactics subjects and two Teaching Practice courses, it is common knowledge among EFL teachers and fifth-year students at UES that the essence of the CLT approach is to convey a clear and meaningful message. Therefore, the focus is more on content and grammar than in pronunciation. No doubt, that EFL pronunciation researchers like Tergujeff above have also the same feeling toward the CLT approach regarding its drawbacks for pronunciation teaching.

In addition to the general didactical methodologies shortcomings by means of the CLT used in foundational intensive English subjects, pronunciation teaching also faces program or curricular limits, specifically because pronunciation subjects focus dominantly on Segmental (phonemes), devoting only a small fraction of the program to suprasegmentals. Contrary to the previous academic reality the research literature says that regarding English pronunciation

instruction, studies by Derwing, Munro and Wiebe (1998) and Derwing and Rossiter (2003), all of them as cited in Kanioková (2014) show that “the suprasegmental instructional method results in the most improvement in comprehensibility, accentedness and fluency when compared to instruction on the segmental characteristics of speech.”

Not surprisingly, at least one or two more authors of pronunciation textbooks, didactically experts in English pronunciation, agree with the ones mentioned above regarding the importance and even the foremost importance of suprasegmentals over segmentals, whenever it comes to pronunciation teaching, particularly at the initial stages of learning.

Laroy (2012), in his textbook for pronunciation teachers, strongly expresses that “by starting with suprasegmentals, stress and intonation, teachers follow a natural, logical, and pedagogical order”. This author and experienced EFL teacher presents an approach which is “holistic, synthesizing, and integrative.” Holistic because it involves not only physical but also affective and personality factors; synthesizing due to its emphasis on suprasegmental features like rhythm and stress; and integrative because pronunciation takes place in any language learning activity, rather than exclusively in isolated courses. Didactically, the author proposes a teaching approach that is “oblique, pragmatic, and holistic.”

Oblique means that pronunciation teaching and improvement should be indirect; that is, students need not always be aware of what they are learning, though the teacher needs it. It also means that they are not given descriptions of the phonological system or speech organs position until they are ready for analysis, which is until they ask for explanations. At the beginning, through careful observations the teacher must determine which learners need reassurance and which ones are ready to improve. By pragmatic, it must be understood that descriptions of language can never satisfy everyone in class; practice is better. A holistic approach is implemented not only by involving all the learner senses but also by enhancing their confidence and working with their personalities.

The teacher must make students feel that he/she expects them to succeed and the process does not necessarily have to be arduous. One important remark from this author is that “it is important not to allow mistakes to become fossilized with beginners, but correcting too much and too overtly is counter-productive” (p. 12). A last important remark on his textbook

is the anthology of progressive lesson plans he presents, which so far has no parallel in the literature consulted.

Kelly (2012), another interesting textbook author, claims that pronunciation teachers need “a good grounding in theoretical knowledge, practical classroom skills, and access to good ideas for classroom activities.” According to the author, teachers must go beyond reactive pronunciation teaching, which is though absolutely necessary. However, moving to a planned pronunciation teaching is mandatory. Sample lessons must be divided into three types: “integrated, remedial, and practical”. For integrated lessons, pronunciation is an important part of them. In remedial lessons, the teacher is prepared for pronunciation difficulties arose in class; and, for practice lessons, a particular feature, item, or pronunciation topic is isolated and practiced, becoming the main focus of a unit or a lesson. The only critique from our research team is limitation of the textbook in relation to its lesson plans, which we judge of immediate application up to lower-intermediate level students. However, with a little extra effort and creativity, they can be adapted to upper levels.

It is clear that both authors, Laroy and Kelly, agree or overlap regarding at least two aspects: Integration and pragmatics (practicity). Laroy also agrees with the first five authors, mentioned in the first paragraph, in relation to the precedence or at least the emphatic role that suprasegmentals must have in pronunciation teaching.

Aside from the previous valuable experiential knowledge from the experts, available quantitative studies reveal that European EFL teachers need to improve their pronunciation didactics and their knowledge on student’s pronunciation needs. A survey was conducted in several EFL environments among teachers around seven European countries to assess teachers’ pronunciation self-assessment and teachers’ training to teach pronunciation (Henderson A. et al, 2012).

The survey also gathered information about the teachers’ awareness of the learners’ goals, skills, motivation, and aspiration to achieve a native level of English. Interestingly, by using a Likert Scale, on the average the teachers self-assessed their pronunciation favorably with a score of 4.64 out of the maximum of five. However, the self-assessment for their training to teach pronunciation resulted in a mean score of 2.91. By using open-ended questions, the teachers mentioned that they had been trained by means of traditional methods:

Phonetics and transcription, repetition and drills, discussion exercises, reading aloud, and listening tasks. The Table 4 below summarizes the teachers' awareness of their students' goals, skills, motivation, and aspiration to achieve a native level.

The category with the lowest score (3.02) resulted to be the teachers' awareness of the learners' aspiration to become a proficient speaker with a native level or nearly.

Table 4. Teachers' awareness of the learners' characteristics

Country (sample)	Teachers' awareness of learners':			
	Goals	Skills	Motivation	Aspiration*
Finland (n=78)	3.58	3.91	3.88	3.17
France (n=52)	3.77	3.98	3.40	2.90
Germany (n=269)	3.36	3.61	3.53	2.94
Macedonia (nn)	4.00	4.57	3.93	3.43
Poland (n=14)	3.57	4.00	3.35	2.71
Spain (n=22)	3.70	3.95	3.65	2.60
Switzerland (n=16)	4.00	3.75	4.25	3.38
AVERAGE	3.71	3.96	3.71	3.02

- To achieve a native level

After all these elements, either theoretical or experimental and either from the students' side or the teachers' side, have all been brought into play, many questions that arise in the readers' mind. For example, the reader may wonder about which factors weight the most regarding the students' achievement of a native-like English pronunciation or English pronunciation accuracy. He/she may also hesitate which factors are on the teachers' side and which ones on the students' side.

However, this project is going to deal mainly on the research question: which factors on the students' side affect the students' English pronunciation accuracy the most? The hypothesis or tentative answer to this question is environmental factors (exposure, resources, etc.) and personal factors (motivation, personality, etc.) hinder a native-like pronunciation in fourth and fifth year students at the WMC, UES, semester II, 2017. Although these environmental and personal factors affecting English pronunciation accuracy have been determined theoretically and experimentally for ESL educative environments, this study will deal with an EFL environment.

Therefore, gathering and articulating the theoretical, experimental, and anecdotal evidence in trying to answer the main research question, an appropriate hypothesizing arises: The achievement of a native-like English pronunciation (or English Pronunciation Accuracy) according to this theory is highly dependent on environmental factors and personal factors, both of which are within the reach of the students. The theory mentioned was in an ESL environment, but the research will take place in an EFL environment.

CHAPTER III: RESEARCH METHODOLOGY

This chapter presents the methodology for this research study. Moreover, it describes the procedures that were used to achieve the objectives and to answer the research questions. This chapter intended not only to be specific and well-founded but also to look at as many scenarios and their feasible options as possible, which result in any of the stages known as preliminary, planning, and execution phase, respectively.

3.1 Paradigm and Design

The researchers carried out a correlational research to determine the relationship between both independent variables, personal and environmental factors, and native-like pronunciation of vowel sounds at the Western Multidisciplinary Campus, of the University of El Salvador, Semester II, 2017.

The researchers considered a mixed paradigm. Due to its numerous correlations, the study is mainly quantitative; however, it also explores qualitatively the vowel pronunciation topic, both bibliographically and empirically. Since the collection of data was not held over time, the study was also of the cross-sectional type, not the longitudinal type.

The research team especially focused on the following reduced vowel sounds /ə/, /i/, /o/, /æ/, and /ɔ/, as they noticed through a diagnosis study that these were the most frequently mispronounced sounds in fourth- and fifth-year students.

3.2 Sampling Procedure

The target populations for this study were Teaching Practice II and Seminar II students, majoring Licenciatura en Idioma Inglés Opción Enseñanza, at the WMC, of the University of El Salvador, Semester II, 2017, who, in addition to being observed in-situ, that is, in their classes, were surveyed by a written questionnaire, which included a pronunciation test at the end. Regarding correlational analyses, the main focus was on the seminar population, which was conformed by two class groups of 29 and 16 subjects sampled. Analyses were run both ways, as a whole population and separately for group I and group II. This academic joint

played in favor of the research for some type(s) of data reliability because it made a balance between the two groups. Once other variables remained equal, in the average, the two groups behaved similarly.

The researchers required the voluntary participation as well of at least ten students of each group to record samples of the pronunciation of some words containing the vowel sounds just assessed through the main instrument, the questionnaire survey.

3.3 Preliminary Phase

3.3.1 Approaching the Field of Study

Considering the enormous complexity that represents for a non-native the fact of accurately detecting vowel sounds in fluid speech, the researchers focused more on five vowel sounds, /ə/, /ɪ/, /ʊ/, /æ/, and /ɔ/, which were frequently mispronounced by the students, as noticed during class observation period of four weeks, which was antecedent to the questionnaire survey, the main instrument. Also, according to the 3000 most common words, the first two vowel sounds already listed along with the fourth one, are the most abundant in that corpus.

Furthermore, previous to the class observation period and along with it, three teachers were interviewed, two of them with 10 or more years of experience in the pronunciation area and one with similar experience in the didactics and intensive English subject area. From a pronunciation standpoint, teachers are considered the main learning resource, not only for modeling and correction, but also as facilitators. Many of the teachers' answers (Appendix F) resulted consistent with subsequent students' requests, by means of the questionnaire-survey, of changes needed in the Languages Department to improve the availability and quality of learning resources (see I-9, Appendix I).

Last but not least, given their non-native quality, the researchers went into an exhaustive study of different learning strategies and techniques which gave them the temporal ability to identify vowel sounds by listening to spoken language and looking to the position of lips while pronouncing vowel sounds, while backed-up by technology, like audio recording. Some of these techniques and strategies were:

- To go back to pronunciation rules studied in the subjects English Pronunciation, Linguistics, and English Phonology and Morphology, like, for example, sounds of prefixes and suffixes, which frequently take the sound of a reduced vowel like schwa /ə/ and “short I” /ɪ/, just to mention a few. The phonetic symbols of most prefixes and suffixes are also contained in appendixes of good printed dictionaries like Cambridge Dictionary or Longman Dictionary.
- To look up common mispronounced words in the Cambridge Dictionary to learn the correct pronunciation of the vowel sounds in these words. Additionally, researchers practiced intensively common words as auxiliaries.
- To check in pictures and videos the gestures appropriate to each vowel sound and then practicing each in front of the mirror intensively. The gestures show lips position and mouth openness (vertically) and wideness (horizontally), all of it referring to the external position of speech organs.
- To use pronunciation software to complement the pictures and videos mentioned in the previous item. In this software, the internal positions of the speech organs are clearly visible. Two of the software programs used are Pronunciation Coach and Pronunciation Power 2, which are not expensive, and which are pc-downloadable.

Parallel to these strategic contents, the team used two main operational strategies. One was stratifying and reducing the number of vowels observed per class and the other was delimiting the attention to initial and final-syllable sounds pronunciation. These two strategies eased the observations made by a non-native English-speaking research team.

Initially, the focus was on reduced vowels schwa, schwi, and schwu during the first days. In fact, these reduced vowel sounds are abundant in monosyllable words, like function words and modal auxiliaries. Also, all of them are abundant in initial and final syllables. The fourth and fifth vowel sounds subsequently observed were /æ/ and /ɔ/, which presented the enormous advantage of the very distinguishable gestures involved. A third operational strategy was to record audios of the classes, in addition to take notes, to go over the sounds that were not clearly captured during the observation period.

3.3.2 Diagnostic Study

Initially, data from a similar correlational study on the same variables (Peña and Magaña, 2016) was taken into account as a starting point. Then, a more systematic and thematic, observational study has been already carried out not only to identify the most frequent mispronounced vowel sounds, but also to notice the conditions under which the students worked, observing spoken English by means of students' presentations during four weeks, embracing a total population of 95 students among fourth and fifth year. Interviews to three teachers contributed to the diagnostic revealing methodological and curricular aspects. One of the teachers has worked more than 10 years on the Didactics field as well as on the five Intensive English levels, from Basic through Intermediate to Advanced II. Two of the teachers have taught more than 10 years in the pronunciation area, either at the basic or the advanced level.

Based on teachers' interviews, it is clear that there are two avenues of responsibility regarding the problem under study. On the one hand, teachers accept their share of the responsibility pie, as well as institutional accountabilities. For example, talking about infrastructure and learning resources, teachers and students usually deal with very large groups, lack of equipment, and even an inappropriate lab room, not only according to deficient space but also according to scarce Acoustics. For further information on large groups see answers 11 and 12 of Interview 1; ans. 3, Interview 2; ans. 4, Interview 3 (Appendix F). Also, for proof-making purposes, see answers 5, 6, 7 of Interview 3.

Furthermore, regarding methodological and curricular aspects, it must be said that communicative teaching approaches, applied by teachers throughout the major, somewhat hinder students' learning of pronunciation accuracy. Also, the pronunciation subject is not taught at the right moment of the major and students are in need of more practice and number of courses (answers 15, 16, 17 of Interview 1; ans. 6, 7, and 8 of Interview 2; and ans. 7, 8, and 9 of interview 3). Finally, one of the pronunciation teachers mentioned the interesting topic of reduced vowels, which are practically inexistent in Spanish and which currently do not seem to be the focus of pronunciation teaching and learning (see ans. 3, Interview 3, Appendix F). Despite this lack of focus, one of the teachers identified one of the most

abundant reduced vowels as one of the most difficult vowel sounds for students to learn (see answer 10, Interview 1, Appendix F).

The researchers also realized that the amount of exposure to interactive native English was minor or inexistent, that is, inadequate or insufficient to reasonably acquire a native-like English pronunciation. Most of the exposure to native spoken English is by means of authentic materials, mainly videos and movies, which is considered non-interactive (ans. 19, Interview 1; ans. 9 and 10, Interview 2; ans. 12, Interview 3)

On the other hand, Teachers point out the lack of real commitment of students regarding their own training. More than one teacher even thought that they are more interested in passing the subjects than in learning (Ans.4, Interview 1; ans. 8, Interview 3).

We address now the gathering of information by means of observation in-situ. For class observations, pronunciation errors of vowel sounds were obtained from two class groups, which consisted of fourth- and fifth-year students, specifically taking the subjects Teaching Practice II and Seminar II, respectively.

During the class observation period, pronunciation data were taken, first from student presentations of their research projects and then during the spontaneous participations of their peers (See observation guide Appendix D). It was observed that students from fourth- and fifth-year made the same type of pronunciation mistakes, so that there was little or no difference in English pronunciation between the two levels of the major. This similar or equal English pronunciation level for both populations was later confirmed by statistical tests in chapter IV. The errors of the students were written down and the researcher team made use of the audio recording, taking into consideration the compulsory ethical aspects (See 3.4.7).

Also, parallelly, the team carried out a statistical analysis of the most frequent vowels contained in a corpus called the 3000 most common English words. This analysis provided a supplementary angle.

The following (underlined) errors constitute a small sample of the mispronunciations accountable to the two group populations: for example, they mispronounced common words containing the phoneme /I/, such as will, did, is, in, with, sampling; containing /o/ like would, could, should; with schwa as in populationu, about, objective, question, action, or with /æ/ as in

have, had, chapter, advantage. All these words are part of everyday language and which contained the vowel phonemes under study. In addition, students had problems with the “epenthetic” vowel at the beginning of initial “s” common words like Spanish, study, specific, and so on.

It was noted that most of the mispronounced words were common or high-frequency conversational words, particularly in academic environments, so that students should have been aware of their correct pronunciation.

3.3.3 Definition of the Problem

The previously mentioned observational study (2016) and the present diagnostic study, showed that the majority of fourth- and fifth-year students still presented, to say the least, noticeable difficulties regarding English phonemes pronunciation accuracy, dominantly vowel sounds. Such vowel sound pronunciation inaccuracies are perceived by the trained ear, in the most favorable scenario, as accentedness, for which reduced vowel sounds, like schwa and schwa, are mostly responsible. In the most unfavorable scenario, such inaccuracies can produce confusion in native speakers of English or trained-ear nonnatives who have been immersed for years in a native English speaking environment.

Considering that students have already approved the subjects that the curricula established to acquire English as a second language, interlanguage should not be the main concern anymore. Therefore, some more explanations were necessary, more likely of environmental and personal origin.

Regardless the presumably final interlanguage stage of fourth- and fifth-year students reaching their uppermost English level of the major, collected data and other perspectives revealed that, in general, students sampled during the diagnostic were still subjected to a considerable percentage of the typical phonemic pronunciation errors listed by phoneticians (See 2.8.3 and Appendix B). Thus the individuals under study cannot be considered as orally-proficient from a phoneme accuracy view, though approximately 10% of them are naturally fluent enough to be considered proficient from this standpoint. This empirical percentage corroborates the time span from 5.3 to 9.8 years calculated in subheading 1.0, necessary for them to become fluent, based on fluency alone. Obviously, higher-exposure students almost reached full fluency and lower-exposure students would hopefully reach in the remaining 4.8

years full fluency if they kept the same exposure rate. Therefore, accuracy seems to remain an unsolved issue for most senior level student by the end of their major.

It is fair to say, though, that class observations along with the literature reviewed allowed reckoning that fourth and fifth year students still made at least an overall estimated of 50% of the “19 phonemic” errors listed in Appendix B, among vowels and consonants. From these 19 typical error categories, the first 8 correspond to vowel sounds and the remaining 11 to consonant sounds.

As the problem has been delimited to vowel sounds, the location of pronunciation errors has to be narrowed down furtherly. Based on the referred list, it has to be said that from this overall 50% of error types made by senior students, approximately 32% corresponds to consonant sounds and 68% to vowel sounds. Therefore, last-years students still err twice as much in vowel sounds than they do in consonant sounds. Roughly, from the 8 categories of vowel pronunciation errors, only categories 1, 2, 3, 4, and 6 have been made fully and category 5 has been made partially or half way, since /a/ was often substituted by /ɔ/ but /ʌ/ was occasionally replaced by /ɔ/, thus being assigned half a point. Therefore, dividing 5.5 categories by 8 total categories of vowel sounds, a gross value of 68% is obtained. The pronunciation error percent for consonant sounds was estimated in a similar manner.

Not accidentally, this higher weight in favor of vowel sounds matches the data pre-collected from the populations of students under study. According to these data, 60% of Seminar II students accepted to be facing pronunciation problems with vowel sounds, whereas only 31% reported issues with consonant sounds. Thus, data from different sources revealed that vowel sound pronunciation inaccuracies double in number consonant sound pronunciation inexactitudes.

Thus, after furtherly delimiting the multivariable and complex phenomenon at hand, it is crucial to focus on three variables: Personal Factors, Environmental Factors, and Pronunciation Accuracy of vowel sounds. The first two variables are aimed to test and prove correlational the factors that hinder the pronunciation accuracy of vowel sounds in fourth and fifth year students.

3.4 Planning Phase

During this phase the literature review was seen as one of the important inputs of the subsequent phases of operationalization of variables and data collection instruments, respectively. The other major input was the diagnostic study, which helped the team to have an operational or empirical idea of the minimum sample size for students' pronunciation observation purposes. The "how", "why", and "what" of the theoretical framework are addressed. About the "how" and "why", the research team attempted to describe the path followed to build the theoretical framework. About the "what", only key points of the theoretical framework were pointed out here as literature review, especially the ones indispensable to build this proposal.

3.4.1 Time Table

ACTIVITY	MONTH	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November
	Personnel in Charge																
DEFINITION OF THE PROBLEM	Research Team																
LITERATURE REVIEW	Research Team																
DIAGNOSTIC OBSERVATION	Research Team																
ANALYSIS OF THE DIAGNOSTIC OBSERVATION	Research Team																
OPERATIONALIZATION OF THE VARIABLES	Research Team																
DESIGN OF DATA COLLECTION INSTRUMENTS	Research Team																
VALIDATION OF THE INSTRUMENTS	Research Team																
PRESENTATION OF THE THESIS PROTOCOL	Research Team																
DATA GATHERING	Research Team																
DATA PROCESSING	Research Team																

ACTIVITY	MONTH	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November
	Personnel in Charge																
DATA ANALYSIS AND INTERPRETATION	Research Team																
		December	January	February	March	April	May	June									
DATA ANALYSIS AND INTERPRETATION	Research Team																
CONCLUSIONS AND RECOMMENDATIONS	Research Team																
FINAL THESIS REPORT	Research Team																

3.4.2 Literature Review

The state of art contains information that has been reviewed and retaken, not only as valuable data to plan the present methodology, but also to support the results, in terms of analyses and interpretation of data gathered here, as well as to back up the conclusions and recommendations. Four main fields of knowledge that contributed to this study are summarized as follow.

There are cherished referenced articles on personal and environmental factors; and how they affect the pronunciation teaching and learning process. Also, different perspectives have been presented from linguists that have contributed on comparative English-Spanish Phonetics and Phonology, such as the pronunciation error types listed in the text and the respective appendix.

In addition, experiential and empirical contributions have been at hand. A very interesting study called The 3000 Most Common English Words was taken and furtherly reworked. This study can be very useful English teaching and learning, not only for pronunciation purposes, but also from a general acquisition perspective. Finally, the Didactics domain added valuable results on curricular order for better teaching and learning suggesting, on the one hand, a failure-proof order reversal in segmentals and suprasegmentals. On the other hand, respectable polls in European secondary schools revealed the teachers' need for pronunciation instruction methodology, as well as for incomplete knowledge of the students' needs, not only academically but also personally. All this information was the basis to build and conduct a cohesive study.

3.4.3 Operationalization of Variables

The researchers analyzed the variables to assure that they could be observed and measured. Then, the variables were classified into two independent (personal and environmental factors) and a dependent one (pronunciation accuracy).

The independent variables were reduced to those indicators that can be appropriately testable. Finally, the variables were established in the state of art so that they could be understood throughout the whole investigation.

General Objective

1. To determine which environmental and personal factors affect, in a superlative degree, the development of English Phoneme Pronunciation Accuracy of vowel sounds (EPPA Index) in fourth and fifth-year students majoring “Licenciatura en Idioma Inglés Opción Enseñanza” at the WMC of the UES, Semester II 2017

Hypothesis

Environmental factors (exposure, learning resources, etc.) and personal factors (motivation, personality, etc.) hinder a native-like pronunciation in fourth- and fifth-year students at the WMC, UES, semester II-2017

A brief explanation of the variables is appropriate. Clearly, Pronunciation accuracy is the outcome or **DEPENDENT VARIABLE**. Environmental factors and a compound (weighed score) of personal factors are the two **INDEPENDENT VARIABLES**. From the environmental factors, exposure is the most significant and which has been studied the most. Exposure must be understood in its broader sense, which includes practice, use, or production of spoken English as well. However, for correlation analysis purposes, the use or practice of spoken English can be sometimes detached from exposure to English (as shown in the table below). The personal factors' index (composite score) is a representative number of two of the most important personal factors, tentatively intrinsic motivation and extraversion/introversion. However, the analysis of the data will finally reveal the two most important personal factors to be used to build the composite score.

General Objectives	Specific Objectives	Hypothesis	Units of Observation	Variables	Definition of the variable	Indicators	Technique or Instrument	Time (hours of observation)						
<p>To determine which environmental and personal factors affect, in a superrative degree, the development of English Phoneme Pronunciation Accuracy of vowel sounds (EPPA Index) in fourth and fifth-year students majoring “Licenciatura en Idioma Inglés Opción Enseñanza” at the WMC of the UES, Semester II 2017</p>	<p>To establish whether there is a correlation between EPPA Index and ENVIRONMENTAL FACTORS, like exposure to English language and learning resources</p>	<p>Environmental factors (exposure, resources, etc.) and personal factors (motivation, personality, etc.) hinder a native-like pronunciation in fourth- and fifth-year students at the WMC, UES, semester II, 2017</p>	<p>Students</p>	<p>Environmental Factors</p>	<p>External resources accessed by students</p>	<p>Teachers’ correction, use of dictionaries</p>	<p>Questionnaire survey part II and III</p>	<p>100 to 120 min.</p>						
	<p>Exposure to authentic sources of pronunciation</p>				<p>English exposure or quantity hours/week (mass media, ICT tools, natives); English quality</p>	<p>Questionnaire survey part II and III</p>								
	<p>To determine whether there exists a correlation between English Phoneme Pronunciation Accuracy (EPPA Index) and PERSONAL FACTORS like attitude, personality, motivation, and aspiration</p>						<p>English Phoneme Pronunciation Accuracy</p>		<p>Reproduction of native-like vowel sounds in spoken English</p>	<p>Observations made during presentations / conversation recordings</p>	<p>Questionnaire survey part IV (Written test)</p>			
											<p>Personal Factors</p>	<p>Motivation, habits, personality, attitude, age and gender</p>	<p>Observations made during interviews</p>	<p>Questionnaire survey part I</p>
													<p>Information gathered in the questionnaire survey</p>	<p>Questionnaire survey part I</p>

3.4.4 Data Collection Instruments

Initially, an observation guide was designed to gather data during the class observation period that lasted four weeks, the first half of the period was to polish the diagnostic and the second part for triangulation of data sources. Afterwards, a questionnaire survey was the prominent instrument of the research. This questionnaire contained four parts, the first part was for personal information, the second part was for English exposure outside the classroom, the third part was for the practice of English outside the classroom, and the last part was for pronunciation data, specifically a pronunciation written-test. The last part was contrasted with a control production practice of the words contained in the last part of the questionnaire survey. Then, Interviews directed to teachers were implemented to gather qualitative data of the variables. A detailed description of each instrument is stated below:

3.4.4.1 Observation Guide (Appendix D)

This guide is designed to organize inaccurately pronounced English words from Seminar II students' project presentations and Teaching Practice II students' presentations or spontaneous participations. Observations basically focused on five vowel sounds, three of them reduced-vowel sounds. The writing of words in this guide was backed up by audio recordings with the help of a professional journalist-type recorder, Japanese-design, Olympus WS-822, with digital recording.

3.4.4.2 Questionnaire Survey (Appendix E)

This instrument contained three types of design. The initial fill-in-the-blanks information type design was followed by and interwoven with yes/no, open, and multiple choice questions. As a general strategy to check data or information reliability, multiple choice questions were anteceded at an appropriate distance by open questions whose outputs contained similar or related information, just to confirm answer consistency from students. This was because multiple choice questions can be very tempting for selection, even when contrary to reality.

The instrument was structured in four parts. The first part contains a front page chart with very personal questions to gather information about the student's age and gender, place of residence, relatives abroad, and social background, as well as specific academic details like

GPA or previously studied major(s), either partially or totally. Much of this apparently useless information served later for cross-checking of posterior information, as a global reliability test. Also, correlational tests between gender and pronunciation proficiency is useful to confirm or deny other's researchers findings, just to mention an example. Also some personal information is useful to discriminate between statistical populations' behaviors.

This part also contained questions that gave us a wider perspective of every student situation (motivation, educational background, academic expectations, etc.) to gain a native-like pronunciation.

The second part contained information related to the exposure to the English language that the students have outside the classroom. This part was made of 12 questions to see all the sources students use to better their pronunciation skills. The third part collected information about the amount of practice that the students have outside the classroom. It was made of 18 questions. The last part gathers pronunciation data through 11 questions. This part contained a vowel phoneme identification written test between two or three phonemes, which can be minimal pairs or similar sounds to the Hispanic ears, a few distractors were included. By the end of the survey, volunteer students were requested to record outside the classroom a sample of ten words contained in the pronunciation written test, contained in the last part of the survey they had just solved; again, using the digital audio recorder.

3.4.4.3 Interviews (Appendix F)

Full English Interviews directed to teachers were previously planned by designing two distinctive questionnaire guides for three expertise areas of English teaching: English pronunciation, Intensive English subjects, and English Didactics. Advantageously, one teacher was very knowledgeable of the two last academic fields so that only three questionnaire guides were enough. The second questionnaire compiled in Appendix F gathers these two academic areas, which were covered by a single teacher. Technical literature was especially useful to support or design several questions of this second questionnaire.

In general, information collected includes teaching approach(es) mainly implemented, use of ICT tools, number of students per groups, and some teacher's views on methodologies and teaching learning strategies, as well as their personal opinions on students' development.

The three teachers interviewed have served for ten or more years the subjects English Pronunciation, Phonology and Morphology, and Didactics + Intensive English, respectively. For the pronunciation domain, corresponding to the first two teachers, two questions regarding their perception on the most difficult vowel sounds for students and on teachers' statistical knowledge of vowel sounds occurrence were designed, accordingly. Again, the digital audio recorder was utilized.

3.4.5 Validation of Data Collection Instruments

After elaborating the instruments, the content and design of the tools were validated by three experts that belong to the teaching field. The research team provided a validation sheet to each expert with the aspect that has to be considered (see Appendix M).

Actually, an earlier and reduced version the questionnaire-survey had already been validated one year before (2016) by teachers at the Foreign Languages Department of the WMC of UES, when it was used for a Seminar I research project. Therefore, the one done for the present study was indeed a second validation.

3.4.6 Validity and Reliability

The research team presented the instruments to some experts to validate them and make the information reliable. These instruments aimed to gather information of the variables and to fulfill the recommendations of the experts.

The researchers made use of content validity to make sure that the instrument aimed to gather the information that the researchers needed.

3.4.7 Ethical Aspects

The research team followed the ethical aspects that every research project conveys. In general, they ensured that the integrity of the target population was respected. In specific terms and chronologically speaking, the use of audio recording was with the consent of the teacher and students as well. Another important aspect is that the instruments had no names so the researchers looked at the result as numbers respecting confidentiality of the participants. Besides that, the recording included just a correlative number to link it with the questionnaire survey.

They also respected the students desire to collaborate or not with the investigation and nobody was forced to answer any questionnaire or interview.

3.5 Execution Phase

3.5.1 Data Collection Procedure

After creating and validating the instruments, the researchers looked for the suitable time to administer them without interfering with the academic activities of the students.

It is important to mention that before administering the main instruments, the researchers tested it answering it themselves to have an idea of the time that it would take to answer it and of the possible questions from students.

As depicted in 3.4, first, the team collected pronunciation data from class observations, through digital audio recordings of students' project final presentations and writings of erroneously pronounced words. Second, the questionnaire survey was administered to students of Teaching Practice II group 1 and Seminar II groups 01 and 02 students. Then, researchers recorded from volunteer students that had just finished their questionnaire, a control pronunciation practice, outside the classroom, to furtherly contrast the words recorded with the written test on vowel sounds pronunciation, included in the last part of the questionnaire survey. The same two stages were carried out for Teaching Practice students though in a different speech context, which corresponded to students' class presentations and spontaneous peers' participations that took place by the end of the semester.

In the third stage, the researchers conducted interviews directed to teachers and students. These interviews provided relevant information about the knowledge that teachers and students have about the problem under study; moreover, this tool looked to determine what expectations teachers have from the students and vice versa.

3.5.1.1 Dependent variable EPPA Index of Vowel Sounds

The dependent variable EPPA Index of vowel sounds was ideally to be observed through direct speech; however, the nature of this research did not allow the research team to do so, mainly due to the surveying type of research that required a considerable amount of data. Instead, the observable speech was substituted by a written test, included in the last part of the Questionnaire Survey.

One of the general disadvantages of this substitution is that the EPPA score of vowel sounds can be overestimated by chance scoring effect. One specific drawback of this substitution, for instance, is the impossibility to assess the accuracy in avoiding the epenthetic vowel (unconscious addition of a vowel before an initial “s”: stay, stop). Another disadvantage is the impossibility to assess stress and intonation in an instantaneous (naturally acquired) manner.

However, for correlational study purposes, only an EPPA index of vowel sounds is enough, mainly due to the fact that regarding chance, assertive and non-assertive answers cancel out. Also, audio recordings of selected words that were contained in the written test allowed correlation between both to test reliability of the pronunciation test of vowels in a written form.

Aside from the time-saving advantage of a written test, a non-spoken pronunciation test also offers advantages to students, like lowering the emotional filter and allowing more time for self-correction than an oral test. To conduct a fair and still an accurate test on real pronunciation, only high-frequency or common words of everyday, academic environment were used because students were thought to be excessively familiarized with them, so that at the time of writing the corresponding vowel phonemes, they just had to pronounce the given written word(s) quietly, in order to self- elicit the real spoken form in a written form.

This was one of the main reasons to neglect any electronic surveying, which would have been faster and more comfortable to students and to the research team. However, the main drawback was the real possibility for students to be looking up the vowel phonemes in an on-line dictionary, thus throwing down the drain the credibility of the measurement of the dependent variable, Pronunciation Accuracy. Other than this drawback, on-line surveying would have had only enormous advantages for data processing.

3.5.2 Data Processing

To process the data collected, the research team first classified the information in frequency tables and graphics by making use of Microsoft Excel 2013 and all the statistical tools this software provides.

Besides, researchers went further in looking for a correlation between personal and environmental factors; and how these factors hindered native like or optimum production of these vowel sounds.

Furthermore, the research team made use of MedCalc to stablish equality in the results of the Pronunciation Written Test between the two statistical populations. According to its online website, www.medcalc.org/index.php, MedCalc is a statistical software package designed for the biomedical sciences. It has an integrated spreadsheet for data input and can import files in several formats. This software is available for Windows XP (with Service Pack 3), Windows Vista, Windows 7, 8, 8.1 or 10; or Windows Server 2003, 2008, 2012 and 2016 (all 32-bit and 64-bit versions supported).

3.5.3 Data Analysis and Interpretation

All the data gathered were classified, organized and analyzed by the researchers in order to create a database with the valid information obtained. In addition, the researchers used frequency tables and graphics to show the results that helped in correlating personal and environmental factors with EPPA index of vowel sounds in fourth and fifth year students at the Western Multidisciplinary Campus of the University of El Salvador, semester II, 2017.

All this analysis was made taking into account the objectives and the research questions to prove if the hypothesis is true or not.

3.6 Budget

a) Supplies

Type of supply	Name	Cost per item	N° of items	Total
Office supplies	Pens	\$0.10	120	\$12.00

Type of supply	Name	Cost per item	N° of items	Total
	Printer ink	\$ 11.00	4	\$44.00
	Printer paper	\$ 4.00 / pkg.	2 pkg.	\$8.00
	Liquid Paper	\$1.00	10	\$10.00
	Notebooks	\$0.75	3	\$2.25
	Flash driver	\$12.00	1	\$12.0
	CDs	\$ 0.35	2	\$0.70
	Audio Recorder	\$35.00	1	\$35.00
SubTotal:				\$139.95

b) Other Services

Service	Cost	Total
Photocopying	\$0.02 / page * 500 copies	\$10.00
Internet	250 hours* 0.60	\$150.00
Transportation	Varied	\$100.00
Food	Varied	\$100.00
SubTotal:		\$360.00

CHAPTER IV: ANALYSIS AND INTERPRETATION OF DATA

Pie and bar graphs, summary tables, and correlation plots with their corresponding fits are the four basic tools used in assisting the analysis and interpretation of data gathered in this research. For better illustration purposes and even for calculation ease, some pie graphs were divided into two categories, general and specific, not only for theoretical reasons but also to avoid text saturation or excessive package of so many names in a single pie graph or bar graph.

The correlation fits include the theoretical equation that best fits the empirical or measured data and the respective correlation coefficient R , a value between zero (0) and one (1), which is an overall quantitative index of the closeness of the field data in relation to the theoretical data generated by a theoretical equation. This way, an R -value of 1 represents a maximum or perfect fit. For practical purposes researchers around the globe report the existence of a correlation when R s are 0.5 or higher.

After the descriptive aspects of data are presented through the first three tools, the correlation graphs are explained. In general, technical literature on social sciences or arts makes little use of correlation graphs and when it uses them, it shows almost exclusively linear correlation fits. In this study, the linear correlations are marginally presented in appendixes as a traditional basis of comparison and not as the best fit. Conversely, non-linear fits, predominantly polynomial from second to sixth degree, were experimented because they resulted in better fits, which are measureable through higher correlation coefficients R s. Other types of non-linear fits like potential, exponential, and logarithmic fits were also tested out, all of them using the statistical functions of EXCEL electronic sheets and books (software package Microsoft Office 2013). In general, polynomial fits resulted in best or higher correlation coefficients and fitting curves.

Unsurprisingly, good correlation coefficients were obtained between the independent variables and the dependent variable, in the range between 0.57 and 0.94, for the most unfavorable scenario, and between 0.70 and 0.94 for other most favorable scenarios, the most unfavorable one being the division into two statistical populations and the most favorable ones

the division into three statistical populations. Since the maximum coefficient is equal to 1 (perfect fit), the correlations found can be defined as high, in general. Regression is the whole process; which final result is a correlation graph that yields a correlation coefficient.

The best regression scenarios were those that resulted from a division of the entire physical population into two or even three statistical populations, which were distinguishable from each other because each followed a distinct probability distribution, statistically speaking. In fact, in this study, these probability distributions obey not only different statistical theoretical rules but also different physical phenomena, like higher and lower pronunciation proficiency students, for instance. Finally, for the sake of clarity, the degree of the polynomial fit is given by the highest exponent of the member of the equation; so, a polynomial second degree means that the independent variable, i.e. “x,” is raised to the second power (i.e. x^2).

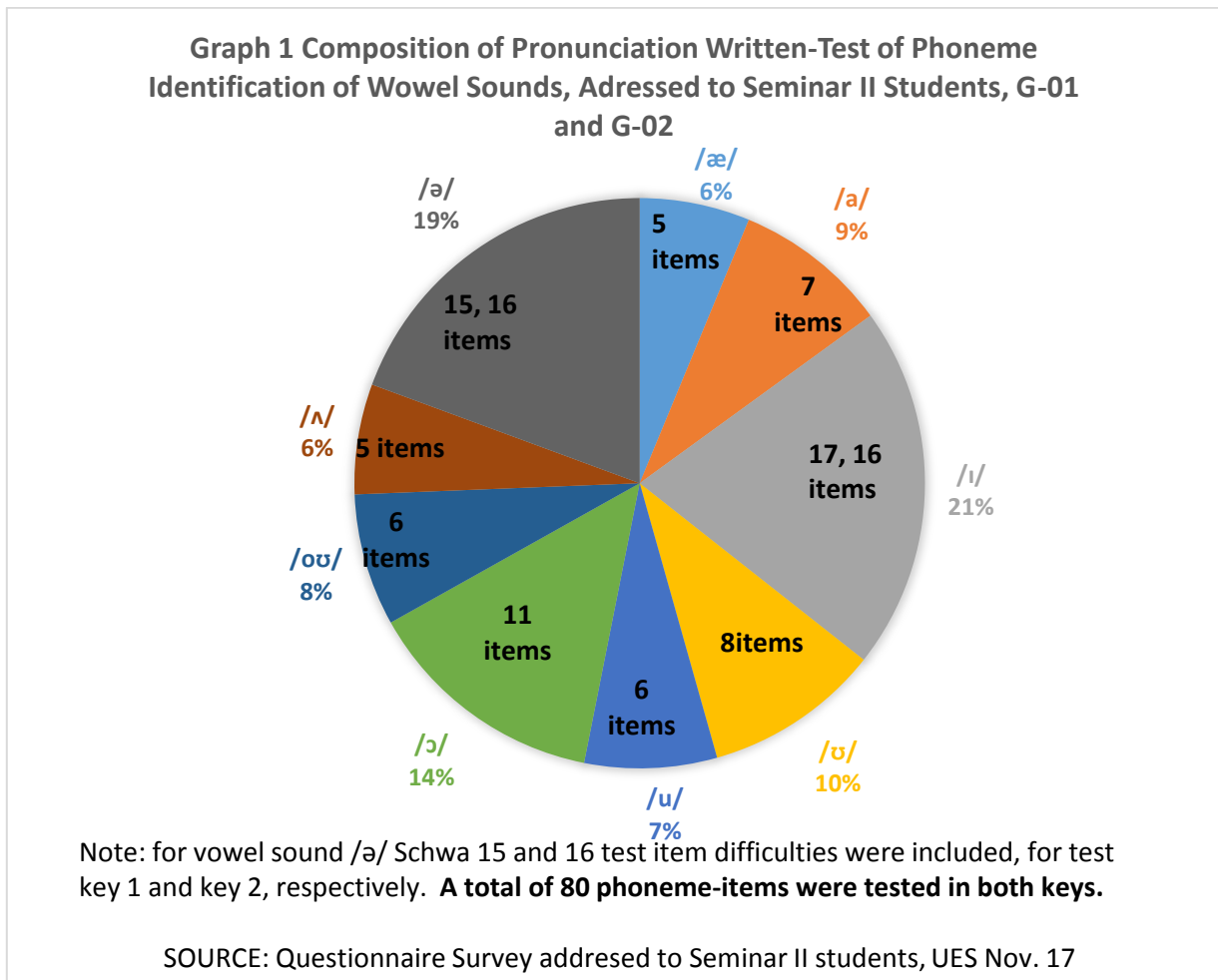
4.1 English Phoneme Pronunciation Accuracy (EPPA) Index of Vowel Sounds

4.1.1 Composition and Results of the Written Pronunciation Test

The pie graph 1 below shows the composition of the written test passed out to Seminar II students (5th year) and to Teaching Practice II students (4th year) to obtain an index of their vowel pronunciation skills, as explained in the previous chapter. For the distribution of the dependent variable, English Pronunciation Accuracy, pie graph 1 shows nine vowel phoneme categories. With exception of few cases of schwas and short “I_s”, where more than one phoneme per word was evaluated, in general, only one phoneme per word was evaluated in 95% of the cases (76 items out of 80). It can be observed that the number of items evaluated in each pronunciation index category are unequal to avoid students’ monotony and automaticity.

Results of the EPPA index test for vowel sounds are depicted in bar graph 2 below, which shows that only **8 students out of 45 (17.8%)** of the entire Seminar II class population passed the EPPA test, included as part of the survey: This means 3 students out of 16 for Group 01 (18.8%) and 5 students out of 29 for Group 02 (17.2%). In comparison, a slightly diminished **14%** (7 out of 50 Ss.) of Teaching Practice II students passed the test. An overall averaged value of **15.8 %** (15 out of 95 Ss.) of passing-grade students for the two populations is statistically more representative, as the English levels of them are proved equal ahead in this

heading, so that the two populations can be combined respect to the “EPPA” dependent variable.



Such results on pronunciation testing from both students’ populations make researchers believe that the test was not as easy to students to solve as a similar test passed out in a previous correlational research project, where test results were more favorable, specifically in a Seminar I correlational study on the same variables, where the overall passing grade rate was **44%** (Peña & Magaña, 2016), for both vowel and consonant sounds, separately.

Addressing some of the specifics of this referenced “old” pronunciation test, it must be said that it included the same number of difficulty items as the new one, around 80 as the total but it was immersed in a shorter questionnaire. This lesser length and monitoring of students could have been advantageous for this more favorable result of the 2016 class test, which was

one third shorter and whose care-takers were half as many. Also, the old test was designed with a unique key, instead of two, thus making it more difficult to control for cheating, not to mention on this regard the additional monitoring of the present test of the 2017 class, for which three or four researchers were at hand instead of two, preventing the use of cell phones or other tools for cheating. A third reason to seriously affect the more unfavorable results of the 2017 class is the possibility of a higher emotional filter, unintentionally caused by some circumstances as follows.

For example, in the present research students had been observed for pronunciation for a period of several weeks before they took the pronunciation written-test, whereas in the other research the test was unexpected. The observational period may have increased the students' emotional filter instead of lowering it, thus increasing anxiety or other cognitively counterproductive emotions, especially because researchers also had volunteering students record audibly for pronunciation of selected words after the written test.

Returning to important statistically-affecting facts of the present study, it should be said that many students handed in an incomplete questionnaire-survey and many of the students that remained more willing to collaborate were handed out their questionnaires back for them to do or complete the Pronunciation part. As a consequence, such faulty or inexistent data are filed and tagged as scattered data in tables and graphs, which are in reality skyrocketed data better known as outliers, characterized by both extreme values, low or high.

4.1.2 Phoneme Pronunciation Accuracy versus Fluency

External circumstances that could have contributed to students' relative failure in the pronunciation test have been exposed. However, the most important reasons can be of internal nature or inherent to students, which means that they could have had their origin in what EPPA means to students, their awareness about it and the relative importance they assign it. Three questions formulated to students, correspondingly compiled in tables **5a**, **5b**, and **5c**, explored students' mindset about it.

Table 5a The most Important Aspect to Students Regarding Spoken English

Subject	Seminar II		T. Practice II	
	N° of Ss.	%	N° of Ss.	%
Fluency	26	57.8%	29	58.0%
Phoneme Accuracy	19	42.2%	21	42.0%
Total	45	100.0%	50	100.0%

Source: Questionnaire-Survey addressed to Seminar II and Teaching Practice II students at UES. Nov., 2017 [Q16-PI]

Table 5a above illustrates that, when confronted to only two options, 58% of the students thought that fluency takes some precedence over phoneme accuracy, the latter representing only 42% of students opinions. However, when released from too much constraint and measured with an ampler scale and lesser interdependency, students from both populations thought that EPPA is a better indicator of native-like pronunciation than fluency, 66.8% and 69.8% of the time, respectively (global frequency, bottom of Table 5c).

Table 5b How Often EPPA Is Important for Native-Like Pronunciation According to Students Populations' Opinions

Frequency		Seminar II Ss.		T. Practice II Ss.	
Qualitatively	Quantitatively	N° of Ss.	%	N° of Ss.	%
Hardly ever	5%	2	4.4%	1	2.0%
Occasionally	30%		0.0%	4	8.0%
Sometimes	50%	12	26.7%	13	26.0%
Frequently	70%	22	48.9%	13	26.0%
Almost always	95%	9	20.0%	19	38.0%
Total(s):		45	100.0%	50	100.0%
Global frequency			66.8%		69.8%

Source: Questionnaire-Survey addressed to Seminar II and Teaching Practice II students at UES. Nov., 2017 [Q21-PI].

**Table 5c EPPA is a Better Indicator of Native-Like Pronunciation than It Is
Fluency**

Frequency		Seminar II Ss.		T. Practice II Ss.	
Qualitative	Quantitative	N° of Ss.	%	N° of Ss.	%
Strongly disagree	5%	1	2.2%	1	2.0%
Disagree	30%	10	22.2%	9	18.0%
Do not know	50%	10	22.2%	16	32.0%
Agree	70%	20	44.4%	19	38.0%
Strongly agree	95%	4	8.9%	5	10.0%
Total(s):		45	100.0%	50	100.0%
Global frequency		57.4%		57.6%	

Source: Questionnaire-Survey addressed to Seminar II and Teaching Practice II students at UES. Nov., 2017 [Q23-PI].

Again, when assessed through a more complex and uninfluenced scale, students from both populations agreed that EPPA is relevant around 67% and 70% of the times, respectively, according to the global frequency at the bottom of Table 5b above. These last percentages mean that students recognize the uttermost importance of EPPA; however, when forced to decide between two variables, EPPA or fluency, the balance seems to be tilted toward fluency because students were instructed that way (see 2.10). The third variable, of grammatical spoken English, is taken for granted, given the senior level of the students, which guarantees that grammar is not a major problem when it comes to spoken English.

Taking the average values from Tables 5a and 5c individually, it is clear that both divert from the central value of 50% by the same amount. Nonetheless, averaging both of them the 50% is reached, which means that, when added-up, both populations, reaching a total of 95 students, make a sample large enough for centrality, therefore being this sample size more reliable than the sizes of the individual populations when it comes to statistical measures of central tendency. This does not prove though that mean values from both populations are

equal, it only proves that a sample size of 95 students is more trustworthy than individual samples of 45 and 50 students.

4.1.3 Statistical View of the Results of the Written Pronunciation Test

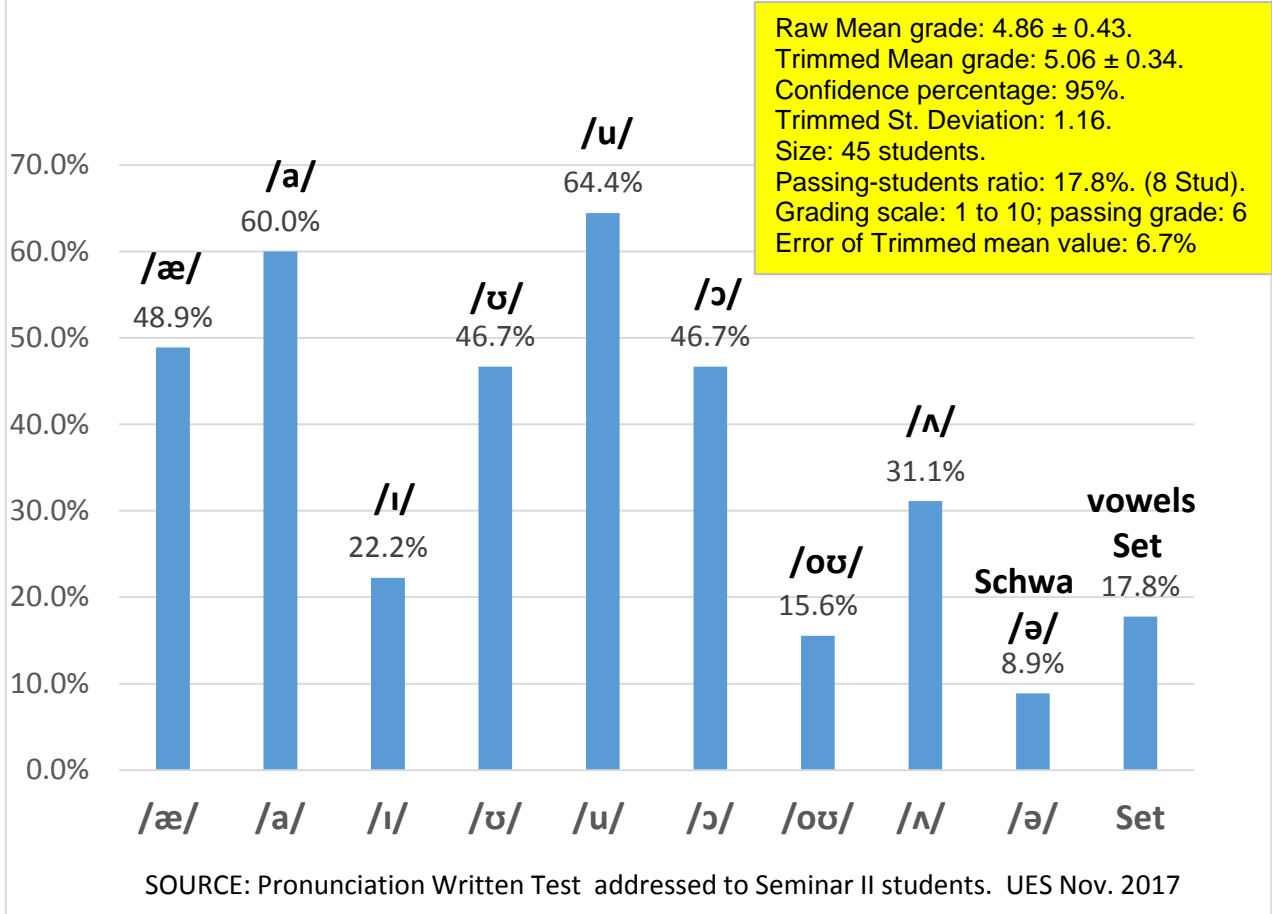
Bar graph 2 below exhibits the results of the pronunciation written-test in terms of percentages of passing grade students, as well as the main statistical parameters, like mean grade and standard deviation, for Seminar II students including both class groups. The test was administered in a written form as the final part of the questionnaire-survey and consisted of 80 difficulty items, basically of vowel phoneme identification, where students needed to discriminate the correct phoneme out of two or three phonemes. The grading scale is from 1 to 10 and the passing grade is 6.

As expected, the contrast between similar-to-Spanish vowels and different-than-Spanish vowels is confirmed by the results, in which the highest passing grade percentages were for the former types (/a/, /u/) and the lower passing percentages for the latter types (/i/, /oo/), being the lowest value for the schwa (/ə/), for which only about **9%** of the students passed. However, **17.8%** of the students passed the total test or vowels set.

Teaching Practice II and Seminar II are subject matters taken by students finishing their fourth and fifth year of the major, respectively. However, they are distinguished by only two consecutive courses, Seminar I and Seminar II, which are not English-formative in a whole sense because they are research subjects, called English-peripheral by some teachers. Therefore, a similar or equal EPPA Index level was hypothesized since last chapters. To prove statistically the sub-hypothesis of **equal level of English pronunciation** for these students, despite their different major level, two types of statistical tests were performed to determine if the two samples belonged to the same population. Table 6 below summarizes the tests carried out, whose calculation outputs and software packages are compiled in Appendix G.

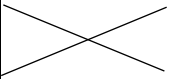
The t-test and the F-test were used to test whether the two trimmed means and the two trimmed standard deviations, respectively, were not statistically different from each other. Correspondingly, the software utilized was the EXCEL statistical functions and the specialized statistical package **MedCalc** to carry out the t-test and the F-test, respectively. Input summary tables and computational outputs are compiled in Appendix G.

Graph 2 Passing Grade Students' Percentages of the Pronunciation Written-Test According to Vowel Sound(s), Seminar II Students, G-01 and G-02



The row mean grades of 4.46 and 4.86 in Table 6 below are distorted by extremely low grades, which correspond to unwilling students to volunteer in filling out a survey-incorporated test, generally handing it in completely or nearly empty.

Table 6 Statistics of the Pronunciation Written-Test Results of Vowel Sounds for Students' Populations of Two Subject Matters¹ Comparison of Final Grades between Teaching Practice II and Seminar II (Scale 1 to 10)

Type of Central Tendency Measure	Subject Matter Population		Percentage Difference	Observation
	Teach. Practice II	Seminar II		
Raw Mean ²	4.46	4.86	8.2%	Higher than maximum admissible statistical error of 2%
Trimmed Mean ³	4.97	5.06	1.8%	The statistical t-test reveals that the two means are equal. (Appendix G)
Mode	5.13	5.13	0.0%	Lower than maximum admissible statistical error of 2%
Median	5.13	5.13	0.0%	Lower than maximum admissible statistical error of 2%
Class Group Size (Students)	50	45		Both higher than 30, so that both t-test and z-test are applicable
Trimmed Standard Deviation	1.16	1.32	12.1%	The statistical F-test reveals that the two standard deviations are equal. (Appendix G)

Note 1: Though from distinct major levels, according to the curriculum, these two subject matter populations have the same level of English.

Note 2: The Row Mean takes all the grades into account, including zeros from volunteer students unwilling to complete the survey test.

Note 3: The Trimmed Mean discards outliers far below two standard deviations of the mean value, which are generally zeros or nearly. These outliers are located in the tails of the probability distribution.

According to formal electronic references inside the Statistics field, trimmed means are “robust statistics, resistant to gross errors” (Trimmed mean, ND; NIST, ND) and are calculated using at least two methods. In our research, for the calculation of the trimmed means, it was necessary to discard statistically the grades that fell far below two standard deviations of the mean in order to eliminate tails that fell into the 5% designated for extreme data, sometimes called outliers.

According to our data in Table 6 above, the trimmed mean of the sample is more representative and closer to the real mean or statistical population mean. In fact, the trimmed means of two students’ samples are closer (1.8% error) than their row means (8.2% error). Also, both trimmed means, with value around **50%**, closely **relate** to **49%** of Seminar II students that reported to use any kind of strategy for pronunciation improvement, as well as to the **55.5%** of students that expressed to use the dictionary to look up not only unknown-pronunciation words but also presumably-already-known pronunciation words. For these last two percentages see tabulated data (Appendix H).

In the statistical domain, the English pronunciation levels of students that registered the subjects “Teaching Practice II” (fourth year) and “Seminar II” (fifth year) were hypothesized to be equal or very similar since the beginning, due to curricular similarities. Now the hypothesis has also been statistically proved, both for **Central Tendency** Measures (Mean) and for **Dispersion** measures (Standard Deviation).

In a similar fashion, the statistical equality between the two class groups of the subject Seminar II were tested for centrality and dispersion and they resulted to belong to the same pronunciation level, according to the EPPA Index of vowel sounds (Appendix H).

4.1.4 Sample of Words Tested for EPPA

Continuing into more specific details and analysis of the pronunciation results, bar Graph 3 below illustrates tabulated data for vowel-pronunciation tested words that correspond to the whole population of 95 students, which includes 45 of Seminar II and 50 of Teaching Practice II. The graph shows the percentage of students that asserted the right vowel phoneme answer in selected words of the pronunciation written test. Only 14 out of 83 vowel pronunciation items are presented now. Consistent with the main focus on reduced vowels, researchers decided to include in this graph some items, typical of the three most

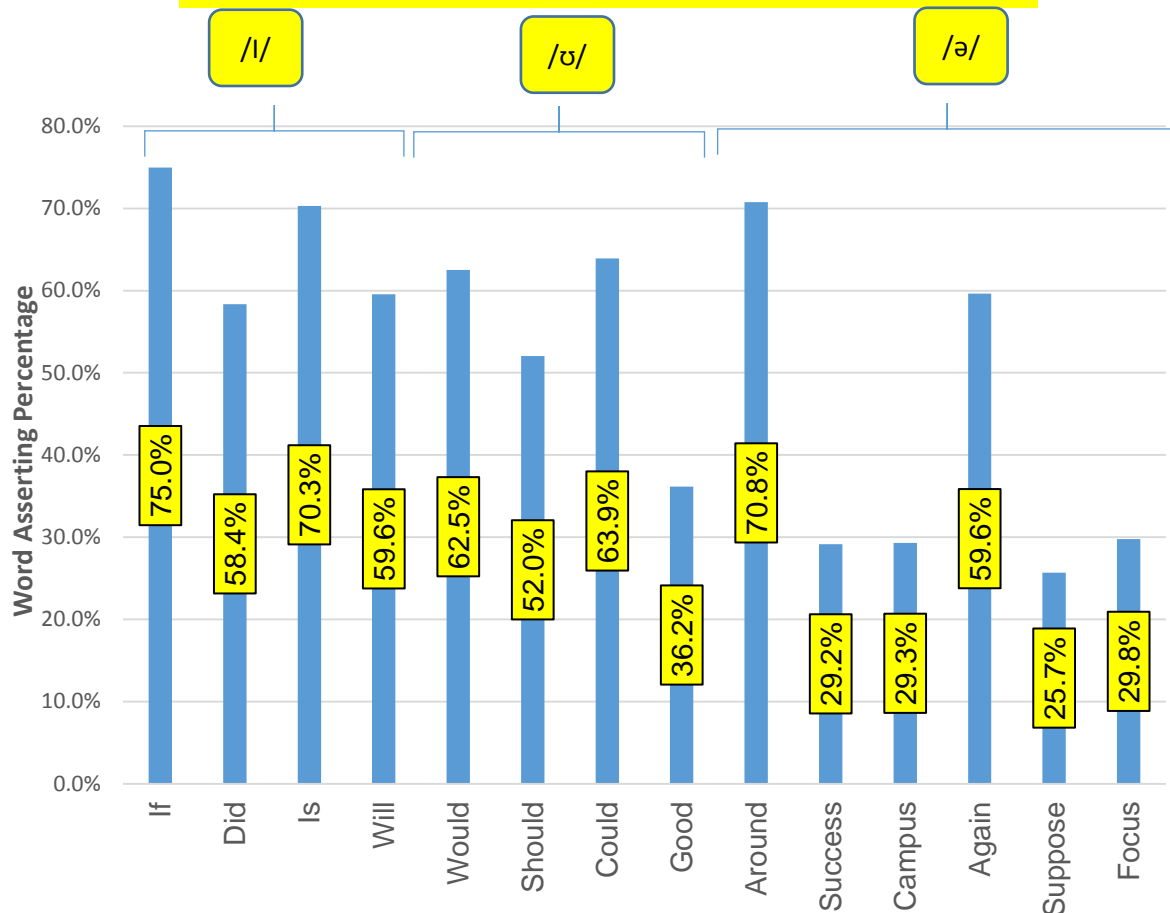
representative reduced vowels, which are “short I” /ɪ/, schwa /ə/, and “short u” /ʊ/; the first two because they are the two most frequent vowel sounds and the third because its occurrence in auxiliaries makes it a high impact and high frequency phoneme.

In general, the scoring percentages in graph 3 below are lower than the minimum expected Grade Point Average (GPA) of **70%** of a Bachelor’s degree in English Language. However, though lower than expected, the values summarized in the graph are still higher than the actual English pronunciation asserting rates estimated during the class observation period, specifically during project presentations in fourth and fifth year students, which ranged between **5% and 15%** for these three reduced vowel sounds, schwa /ə/, /ɪ/, and /ʊ/, the last two informally called “schwi” and “schwu” in some phonetic environments.

In graph 3, initial syllable schwas, like those contained in the words *around* (71%) and *again* (60%), resulted less difficult to identify than final syllable schwas, like the words *campus* and *focus*, with asserting score percentages of only 29.3% and 29.8%, respectively. These last two words are of extensive and intensive use in students’ presentations of fourth and fifth year. Also, the graph illustrates that u-spelled schwas, either syllable-final (*campus*) or syllable-initial (*success*), proved to be more troublesome for identification and therefore for pronunciation than a-spelled schwas.

Graph 3 Mean Percentage of Asserting Score Students on Sample Words Assessed in the Pronunciation Written Test

Sample size: 95 Ss [Seminar II (45) and Teaching Practice II (50)]



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov. 2017

The relative failure in relation to the words campus and focus is, in the first place, a remarkable suspicion of the students' **insufficient use of dictionary** for looking up words and practicing them, especially those whose vowel pronunciation they erroneously assume they already know or produce proficiently. These words have been called **presumably-already-known-pronunciation words**. In fact, survey-collected data confirm that, though 96% of the students' population reported to check pronunciation by looking up in the dictionary an average of **8 words** per presentation, actually, **60%** of them also simultaneously reported to

have checked for pronunciation less than the expected quantity or class reported mean. From this cumulative 60%, **33%** of the students reported never having looked up any presumably-already-known-pronunciation word and **27%** of them informed having looked up very few presumably-known-pronunciation words in the dictionary for pronunciation reinforcement purposes. In this case, very few meant less than the class mean of **3 words** per presentation reported by the entire population as already-known-pronunciation words checked out in the dictionary for pronunciation.

However, when students were asked to write down examples of words and their phonetic transcription they had looked up for pronunciation of their last presentation, only **46.7 %** of them were able or willing to write a maximum of three words regardless their reporting more. Coincidentally, this 46.7% correlates the most with the mean grade of the population, which rounds **50%**. Even worse, only **13.3%** of the students were able to write the respective phonetic transcription for each word. Though this considerable lower percentage does not necessarily mean students were dishonest in their report, it more likely means that only 13.3% of the students experienced **meaningful pronunciation learning** or that 13.3% of them have developed more the linguistic type of intelligence, linked to the **multiple intelligences concept** and therefore to the corresponding learning style. Not accidentally, this 13.3% roughly agrees with the expected average value of 11% for each intelligence, obtained by dividing the 100% by the nine types of intelligences. More research is needed on this regard for conclusive findings. Not very coincidentally, this 13.3% is the rate that correlates the most with the overall passing grade rate of **15.8%** for the two populations, mentioned on the second paragraph of this heading.

In second place, missing the right schwa location in these two typically academic words (campus, focus) is a decisive evidence of students missing one of the most important supra-segmental features of English, like **rhythm**, and it is ultimately a repercussion, among others, of their inexistent or unsatisfactory use of pronunciation learning strategies that they reported, which have been compiled as two categories that embrace **66%** of the students, namely as **ambiguous** or **inexistent pronunciation learning strategies** (Appendix I, Graph I-1).

Continuing with the analysis of the rest of words tested, included in the sample of Graph 3 above, on the one hand, the assertion scoring percentage of five auxiliaries ranged between 52% and 64%, with an average value of 59.3%, which roughly means that only 6 out of 10 students succeeded in identifying the correct vowel phoneme/allophone or its correct syllable position.

On the other hand, unbelievably, one of the lowest assertion percent (**36.2%**) corresponds to the high frequency word *good*, which, according to class observations, was always mentioned by students not only at the beginning of each presentation but also many times during each presentation. Also, this word belongs to the beginner's domain, which makes one believe that pronunciation error **fossilization** remains to be seen as a very plausible explanation. The assertion percent estimated during the class observation period is even lower than this 36.2% when it comes to fluid spoken English.

Unsurprisingly, the most difficult vowel sounds for students to pronounce according to the pronunciation test, also match the percentage of occurrence of the vowel sounds that entangle students the most, according to words survey-reported by students as pronunciation-troublesome for their class peers. Table 7 below summarizes the percentage of occurrence of vowels contained in 76 words (4th column), reported by 51 students (3rd column) of the two students' populations under analysis. Only percentages are shown in the table but the numbers and specific words are compiled in Appendix J.

The two "types" of schwas /ə⁺/ (last column) represent the most frequent occurrence of **47%**, while /ɪ/ is the second most frequent with **32%**, whereas /æ/ occupies the third occurrence percent of **11.7%**. Not surprisingly /e/ is encountered in the fourth place with **10.1%**, while the schwa-formed sounds /ɜ-/ and /ɚ-/ added to the schwas conforms **60%** of the frequency, which means that schwas plus schwa-formed, vowel-like sounds, like the last two, are found in 60% of the words reported by students as difficult to pronounce accurately by their peers.

Table 7 Percentage of Occurrence of Vowel Sounds in Words Reported as Pronunciation-Accuracy Troublesome to produce to students, according to Peers. Calculated from 76 words reported by 51 students

Subject matter's name	Students population size example-word	contributing Ss	Categories reported by Ss		Percent of Troublesome vowel sounds that Ss reported to have perceived as erroneously pronounced in their classmates																			
			words	Other contributing category	ə	ɔ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ɚ	ai	ou	ə + ɔ					
Seminar II	45	24	39	"ed" ending in past tense of	32.5%	17.5%	32.5%	2.5%	5.0%	10.0%	10.0%	5.0%	2.5%	12.5%	5.0%	5.0%	2.5%	5.0%	50.0%					
Teaching Practice II	50	27	37	regular verbs	28.9%	15.8%	31.6%	0.0%	13.2%	13.2%	0.0%	2.6%	0.0%	7.9%	5.3%	10.5%	0.0%	0.0%	44.7%					
Two populations (Sem + T. Pract.)	95	51	76	"ed" ending in past tense of regular verbs	30.6%	16.6%	32.0%	1.2%	9.3%	11.7%	4.7%	3.8%	1.2%	10.1%	5.1%	7.9%	1.2%	2.4%	47.2%					
					2nd most freq.						3rd most freq.						4th most freq.							
															Schwa formed sounds					60.3%				
																				1st freq.				

Note: super index schwa ^ɔ represents eluded schwa and e' is the adopted convention for the epenthetic vowel, which is erroneously added before an initial "s" word by Hispanics learners of English. **Source:** Questionnaire-survey addressed to Seminar II and Teaching Practice II students, UES Nov 2017. **See Appendix J for further information**

Though these percentages differ, from zero to 5%, to those calculated for the 3000 most common words (Appendix A), the general tendency agrees, except for the /e/ vowel, which is the third most frequent in that corpus according to the universe of words. However, the occurrence here refers to pronunciation troublesome words. In simple words, since this sound exists in Spanish, it is troublesome for some spellings, especially “a,” for which students reported the words *necessary*, *multidisciplinary*, *paradigm*, *vary*, and *parents*, of which all the underlined vowels are pronounced with /e/ in the US pronunciation.

During the class observation period, the research team also reported, in addition to the previous ones, the words *dictionary* and *ordinary*. Students’ pronunciation inaccuracy may arise from the fact that they were somewhat exposed in early years to the British pronunciation version, in which the sound /e/ is replaced with an eluded schwa /ə/ sound in words like *multidisciplinary*, *dictionary* and *ordinary*, and with /eə/ sounds in words like *vary* and *parents*. The /e/ sound is also replaced with an /æ/ sound in words like *paradigm*, in the British pronunciation version.

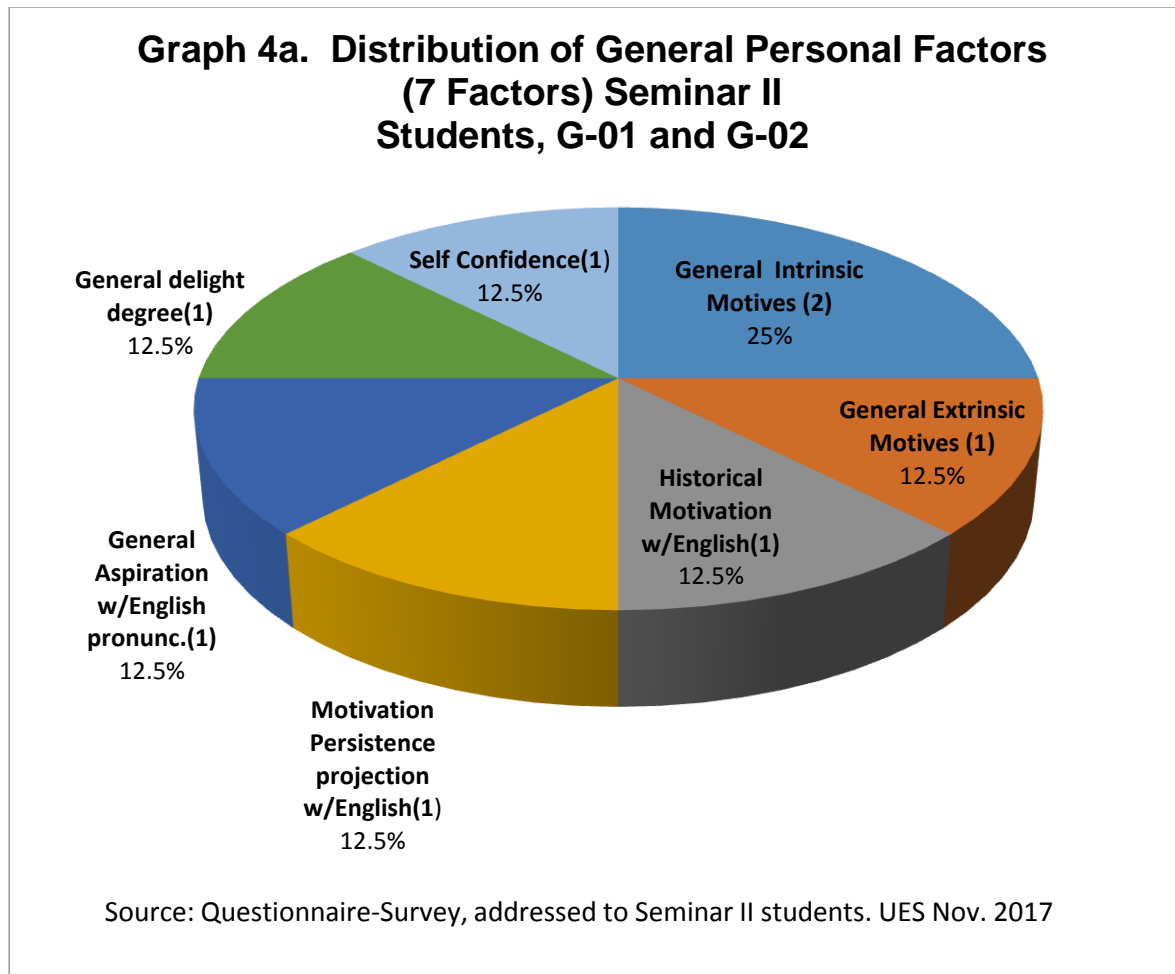
From this brief analysis, it is clear that the US version is more regular and therefore simpler than the British version, in regard to this particular vowel sound

4.2 Personal Factors and EPPA Index of Vowel Sounds

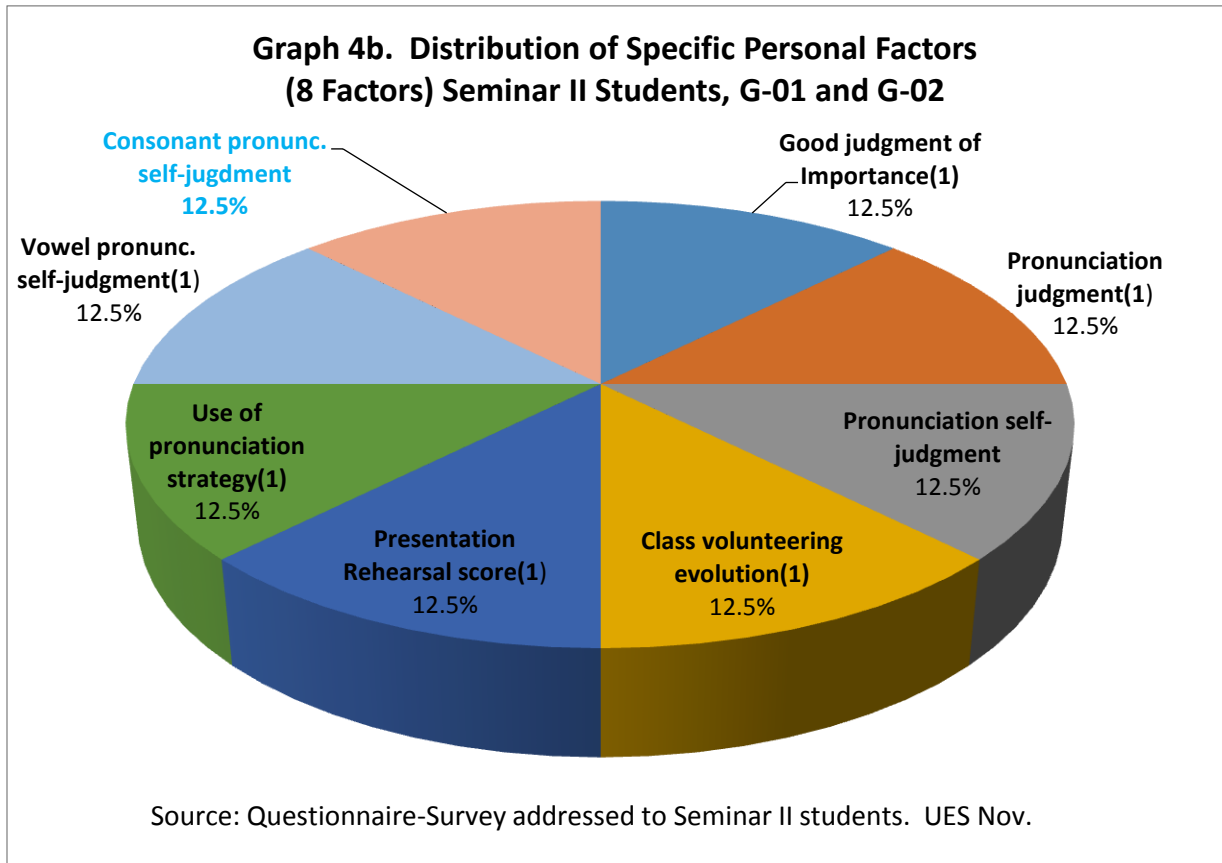
The Pie graphs below (4a and 4b) show the distribution of the components of the first independent variable, PERSONAL FACTORS. A total of 15 indicators of Personal Factors were considered, seven of which are general factors and eight of which are specific factors. Such general and specific indicators correspond to graphs 4a and 4b, respectively. Initials G-01 and G-02 on Graph 3a, provided below, mean that the same distribution of Personal Factors is equally applicable to group 01 and group 02 of the Seminar II class. Just to illustrate briefly graph 4a, self-confidence was given a score of 1 and General Intrinsic motives a score of 2. The corresponding percentage of each of these indicators, respect to the total score, is of 12.5% and 25%, respectively.

All the indicators have similar weight except General Intrinsic Motivation. Indeed, most variables are indicators of intrinsic motives, exception being made for self-confidence and aspiration (of a native-like pronunciation). Literature and careful analysis reveal that, regarding English pronunciation, **historicity and persistence** are strong indicators of intrinsic

motivation since they remain over time; therefore, they are associated to Intrinsic Motivation. Also, even general delight, though a short-term indicator, its intensive nature can booster or trigger intrinsic motivation.



The second pie graph below (4b), “Distribution of Specific Personal Factors”, shown above, intends to confirm the authenticity of the information given by students to build graph 4a. Additionally, Graph 4b shows the distribution of other indicators, some of them associated to more than one personal trait. For example, class volunteering evolution (class volunteering record) has an extroversion component as well as an intrinsic motivation component. Also, presentation rehearsal (pronunciation pre-practice) is a more hands-on type of indicator of general aspiration (for a native-like pronunciation). In few words, personal traits are difficult to isolate for exact measurement one by one.



In the same pie graph, in addition to these indicators, Pronunciation Self-Judgment is a general category that was backed up by other more specific types of pronunciation self-judgment indicators, such as vowel and consonant pronunciation self-judgment, correspondingly. All these self-judgment indicators are indeed self-awareness items. Additionally, Good Judgment of (English pronunciation) importance is somehow an indicator of general aspiration as well as of intrinsic motivation. Finally, the Use of a **Pronunciation Strategy** is a consequence and a proof of motivation. This is all pertaining to the descriptive statistics of the study.

It is time to proceed with the analytic Statistics mainly characterized by the regression analysis, whose main outputs are a correlational fit equation and a correlation coefficient **R**, as explained in more detail in the introduction. Three main regression exercises were done. First, the smallest population samples of 29 and 16 students from Seminar II class groups worked

isolated and combined (45 Ss.) to go, then, through larger population samples of 50 students (teaching Practice II), to arrive to the largest population resulting from the addition of the previous two, which was 95 students from both subject matters. Two fits were used in the first exercise and three fits for the second and third exercise. Each fit follows a distinct probability distribution corresponding to a different statistical population. The second and third exercise corroborated reliability of the mathematical models and the data.

For the first exercise, the correlation plots between Personal Factors and EPPA Index of vowel sounds for the larger class group 02 of Seminar II (29 students), depicted below in Graph 5a and summarized in Table 8 (2nd row) yields correlation coefficients **Rs.** of **0.80** and **0.70**, for two distinct statistical populations of 18 and 9 students, respectively, and for polynomial fits of third and fourth degree, correspondingly (solid lines).

These two distinct populations follow two different probability distributions, although belonging to the same physical population of students. Accordingly, lower correlation coefficients of **0.69** and **0.65** were obtained for linear fits of the same class group 01 (Graph 5b Appendix K). These lower Rs obey to the small sample size of only 16 students.

In the same graph 5a, polynomial fits (dotted lines) of higher degree were tested out for the same two statistical populations of class group 02, yielding higher coefficients of **0.83** and **0.80**, respectively. However, higher coefficients not always mean better correlations, like in this case that the polynomial curves show several peaks and valleys, which would imply an inverse relationship of the variables in several segments of the curve. An inverse relationship would mean, for instance, that an increase in students' motivation (a personal factor) causes a decrease in the students' EPPA Index, instead of an increment, which would be contrary to the natural behavior of the relationship. The dotted lines represent higher degree of polynomial fits, which, again, are not the best, smoother, and more natural fits, despite their higher Rs. The smoother solid-line fits are better representations of the natural behavior of the relationship among the variables.

When treating the entire class group 02 as a unique probability distribution, no apparent or useful linear correlation results (**R=0.12**), even disregarding unreliable data, which appear on the graph like scattered data [red square dot(s)]. This corresponding graph between Personal Factors and EPPA Index of vowel sounds is filed in Appendix K as Graph 5c, in

which two alternative non-linear, polynomial correlations (**R =0.47** and **R= 0.69**) are exhibited as well. In addition to an extremely low linear correlation coefficient, the regressions yield an inverse correlation between the variables, graphically noticed by the negative slope of the straight line.

For the smaller class group 01 (16 students) of Seminar II, lower correlation coefficients of **0.63 and 0.54** were obtained, for non-linear polynomial and linear fits, accordingly, using a unique probability distribution (Graphs 6a and 6b, Appendix K), given the smaller size of the class group, not large enough to divide it into two or three potential probability distributions, due to its graphical indistinguishability when observing the data plot. In few words, there cannot be a clear trend with only a few data points from five to seven, especially for curve graphs or non-linear fits. So, the inverse relationship observed in the two graphs obeys to the presence of more than one probability distributions that could not be broken down due to the small sample size.

These coefficients obtained in the first exercise were significantly increased in the second exercise to **0.90, 0.86 and 0.82** (Graph 7a, below) when adding up both populations G-01+G-02 and divided into three statistical populations instead of two. Accordingly, 0.74, 0.84, and 0.74 are the three alternative correlation coefficients Rs, of linear type, compiled only as a formality as part of a marginal analysis in Graph 7b (Appendix K).

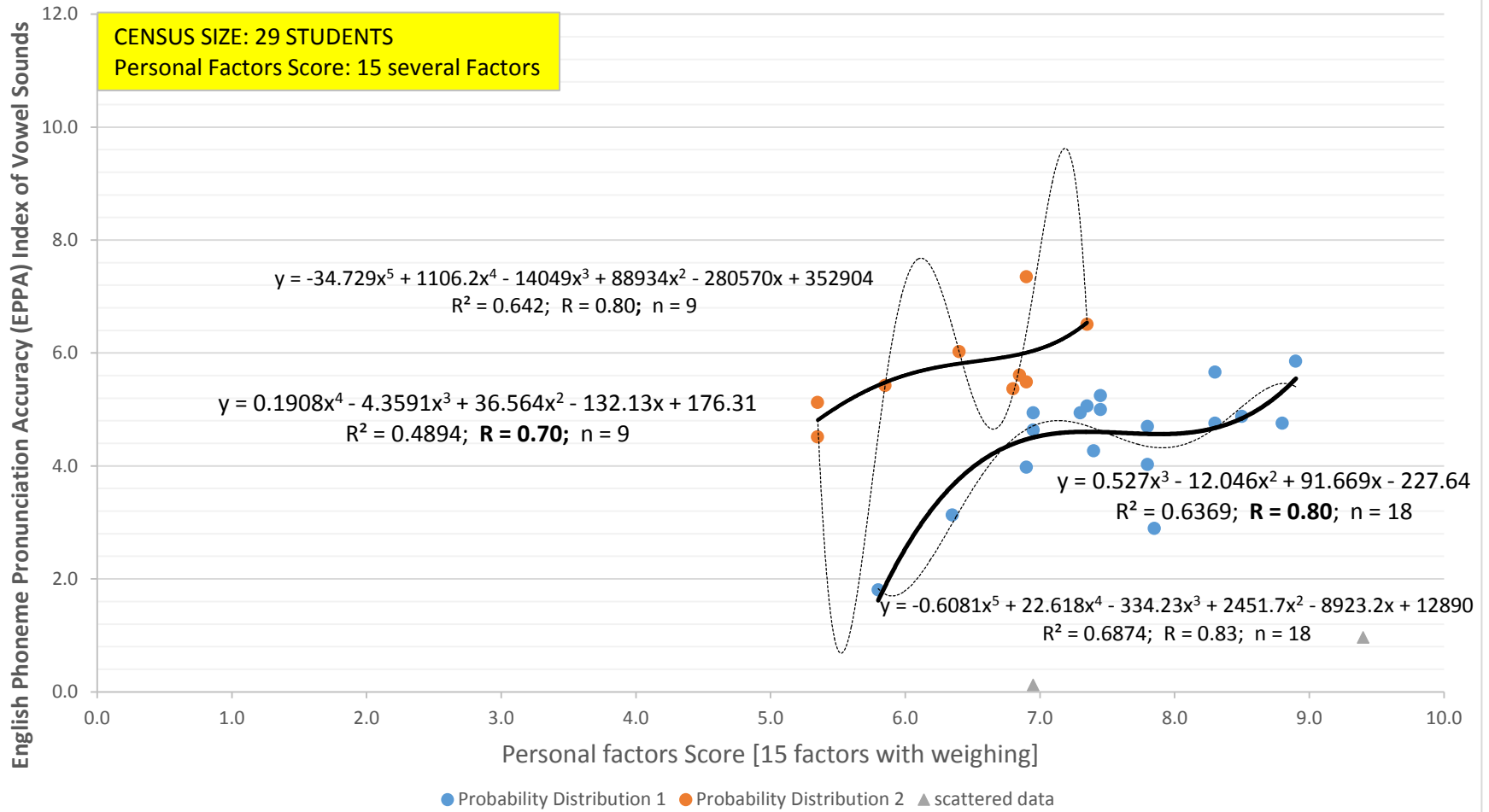
For these three probability distribution that correspond to three subsets or subgroups of the entire physical population of Seminar II (G-01 + G-02), depicted in graph 7a below and compiled in Table 8 (last row), the solid-line curves represent polynomial fits of second, third, and third degree, correspondingly, for each of the previous non-linear coefficients of **0.90, 0.89, and 0.82**, for populations of 17, 14, and 10 students, respectively. One possible explanation for these three curves family is that they are accordingly representative of **lower, intermediate, and upper pronunciation proficiency** students.

Table 8. Comparison between Linear and Non-linear Correlational Fits for Personal Factors and EPPA Index of Vowel Sounds for Seminar II Students			
Physical Population Sample	CORRELATIONAL COEFFICIENTS	Statistical Population Sizes	Graphs number for

or Class Group	Non-linear Fit	Linear Fit	(Number of Students))	Nonlinear/linear fit
Group 01 (16 Ss.)	0.63	0.54	14	6a / 6b (App K)
Group 02 (29 Ss.)	0.70 and 0.80	0.69 and 0.65	9 and 18	5a / 5b (App K)
Group 01 + 02 (45 Ss.)	0.90, 0.89 and 0.82*	0.75, 0.87, and 0.74	17, 14, and 10	7a / 7b (App K)
*These three populations can also be reunited and then divided into 2 populations of 22 and 17 students, with Rs of 0.57 and 0.80, respectively.				

For compilation and illustrating purposes of regression exercise one, Table 8 above summarizes the contrasts between linear and non-linear fits and how the former ones are always improved when substituted by non-linear fits. It also summarizes the graph numbers for Non-linear and linear fits separated by a slash (/) in the last column, where the abbreviation (App) means that the graph is compiled in Appendix K, otherwise it is shown in the text. Also, the total physical population of 45 students (1st column Table 8) was divided into three statistical subgroups populations of 17, 14, and 10 students (4th column), for which non-linear polynomial coefficients Rs of **0.90, 0.86, and 0.82** (2nd column) were obtained, respectively, corresponding to upper, intermediate, and lower learning curves. Also, lower Rs of 0.74, 0.84, and 0.74 (3rd column) were obtained for the corresponding linear fits. The corresponding graphs, for non-linear and linear fits, are depicted in graphs 7a and 7b (last column), of which 6a is included in the text and 7b in the respective Appendix K.

Graph 5a Nonlinear Correlations between Personal Factors and EPPA Index of Vowel Sounds Applying Weighing, Seminar II Students, G-02



SOURCE: Questionnaire-Survey addressed to Seminar II students. UES Nov. 2017

Continuing with Graph 7a, a family of curvilinear graphs consisting of three curves embrace a population of 45 students from Seminar II (fifth year). From these, the lower curve corresponds to a second degree polynomial fit or a quadratic fit, whereas the other two upper curves represent third degree polynomial fits or cubic fits.

The same degree of polynomial fits resulted suitable, as mathematical models, for a similar population of 50 students of Teaching Practice II (Graph 7c below), for which Rs of **0.82, 0.86, and 0.90** were obtained for upper, intermediate, and lower curve subgroups of **10, 14, and 17** students, respectively. This fit of a second set of curves grants some **reliability to the mathematical models** used for both population samples, either quadratic or cubic polynomials. For further reliability, a third exercise of uniting the two populations was done. Graph 7d (Appendix K) unites the two populations of 45 and 50 students to make 95 students as the new total population.

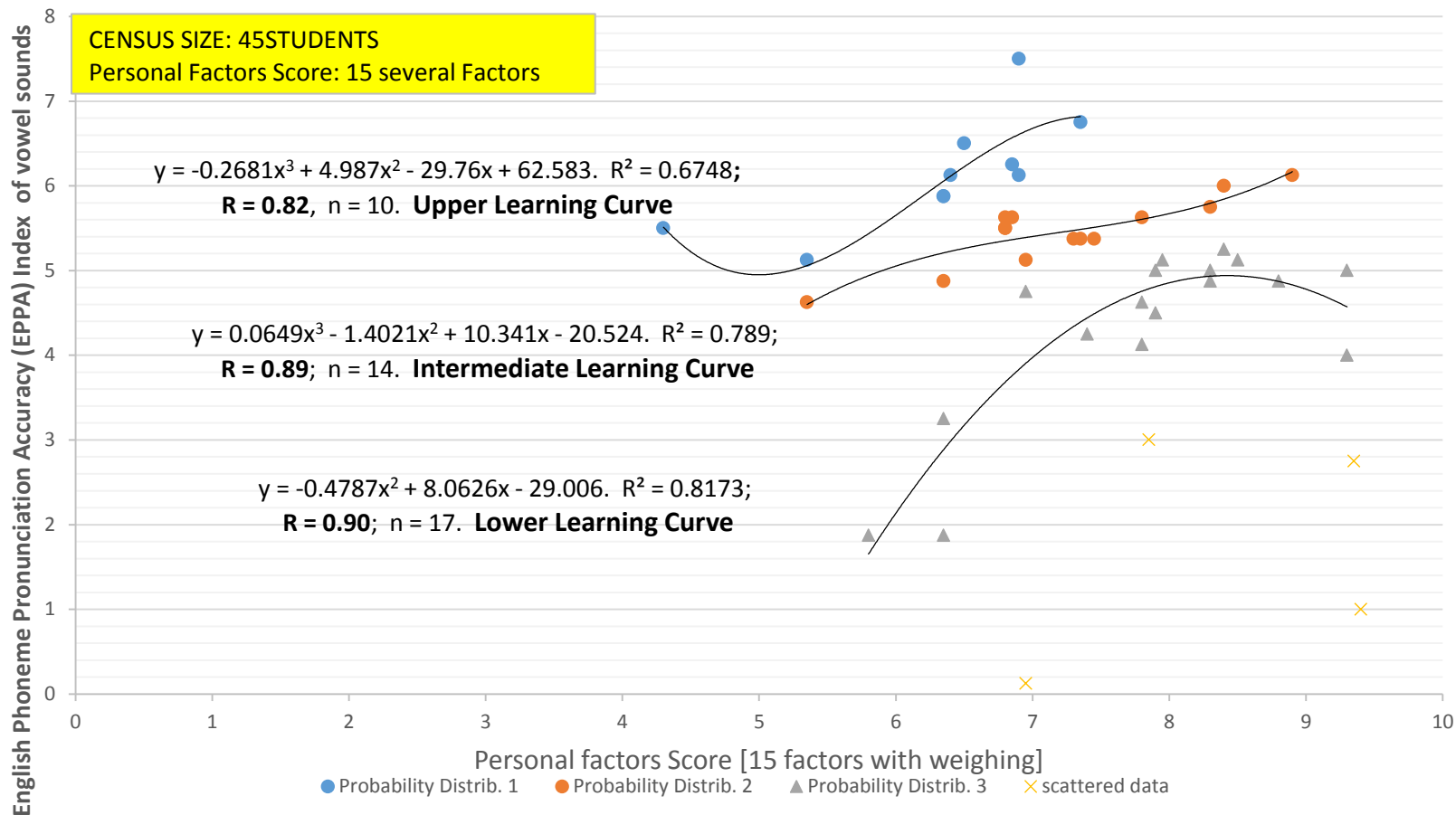
Returning to the family of curves of Graph 7a, the distinct probability distributions that follow each learning curve, upper, intermediate, and lower, can also be related to a distinct social and/or psychological phenomenon. In this case, all the students comprised by the Lower Learning Curve were presumably under higher social or work stress than the other two curve populations or subgroups. According to indirect data collected on social status, lower-curve students belonged to a lower social condition regarding limited infrastructure, transportation, or little or no access to ICT services, like no cable internet service or near-home cybers. In some cases, indirect information also revealed that, though with internet service in their residence area, few students had no access to ICT tools, which was revealed by the hours a week they were using near-home and near-university cybers, with levels that were up 12 hours per week.

Such conditions are generally related to or a consequence of lower social conditions, like poor location, since most students (82.4%) live in outsider municipalities or in the periphery of Santa Ana city. The remaining percentage of students lived in the urban Santa Ana but have no access to ICT tools at home or work 25 hours a week or more. It is inferred that students under this lower subgroup belong to a lower social class. They also represent the dominant subgroup with 17 out of the 45 students of the sample.

In contrast, students gathered in the Upper Learning Curve are all from urban areas of Santa Ana or from nearby cities like Chalchuapa and Coatepeque, both of which relate to the shortest travel times and to a regular and frequent public transportation system. In fact, the two highest grades went to students from Chalchuapa city. Indeed, only 12 out of the 45 students sampled (26.7%) live in the urban Santa Ana city; the rest come from other municipalities and some from the rural Santa Ana. Every student from this subgroup reported to have had enough access to ICT tools, in hours a week. Also, sixty percent of these students passed the pronunciation test and thirty percent reached grades between 5,5 and 5.9, which potentially would have made them passing-grade students under conditions of university law under a normal study term. Therefore, only a remaining 10% is the actual failing grade percent for this subgroup.

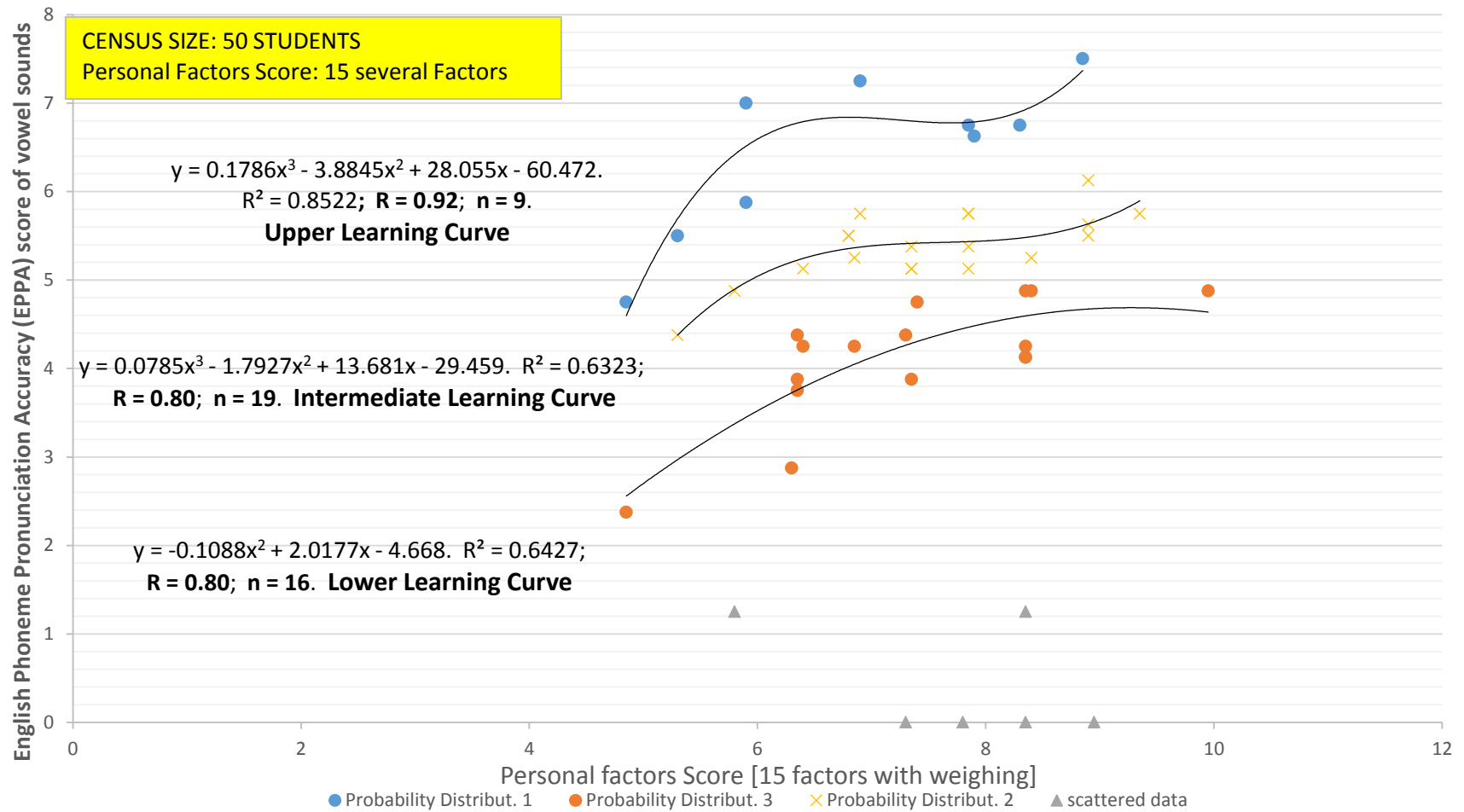
Data from the Intermediate Learning Curve represent students from both populations, insider and outsiders to Santa Ana city. They have also an intermediate social condition.

Graph 7a Nonlinear Correlations between Personal Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUPS 01, 02.



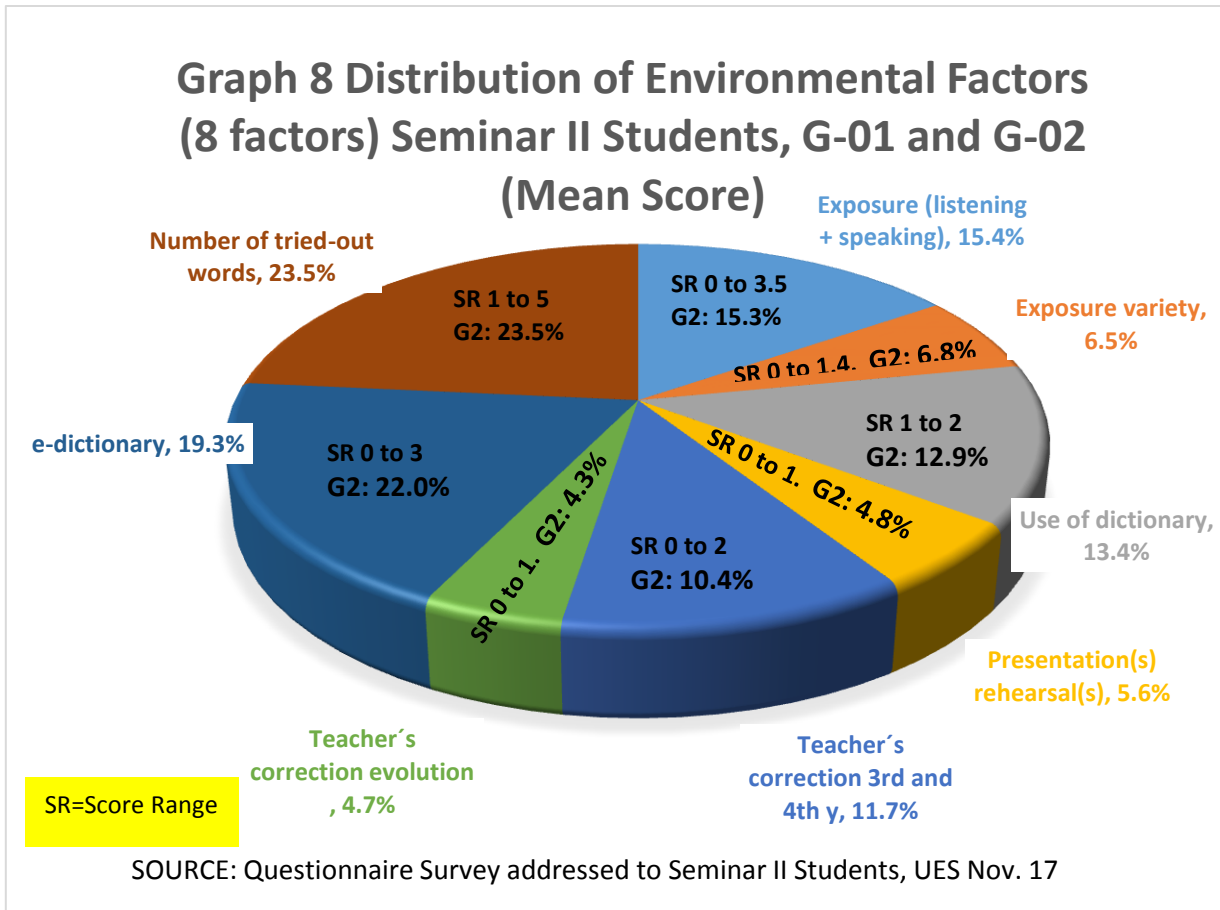
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 7c Linear Correlations between Personal Factors and EPPA at vowel sounds, Applying Weighing. "Teaching Practice II" CLASS GROUP 01. Morning Hours



SOURCE: Questionnaire Survey addressed to Teaching Practice II students, UES Nov 17

4.3 Environmental Factors and EPPA Index of Vowel Sounds.



Pie graph 8 above compiles the distribution of the components of the second independent variable, ENVIRONMENTAL FACTORS for the total SEMINAR II population, which is the sum of class groups G-01 and G-02 of this subject matter. This independent variable has been divided in two component sub-variables, **English Exposure and Learning Resources**.

The variable has also been broken down into 8 indicators, as illustrated above. Score ranges (minimum and maximum score) and percentages based on mean values of the class groups' indicators are contained in the pie. Score ranges are constant and percentages per group change very little. This tiny variation proves statistical stability. Pie-external values list the percentage composition of the environmental empirical data for the total population (G01 plus G02), while the pie-internal ones describe the composition for class group 02, only. A

more detailed descriptive presentation and analysis of most environmental data and individual environmental variables is compiled in Appendix I, from I-2 to I-10.

In Graph 8 above, score ranges for many indicators were assigned based on statistical criteria explained in the previous chapter. According to this graph, there are two indicators of English Exposure, which are English amount and English (Source) Variety. For the English Amount indicator, scores for class Groups 01 and 02 range from 0 to 3.5 and class Group average equals 15.4% of the totality of indicators or total pie. Along with the English Variety indicator (6.5%), English Exposure reaches a 22% of the pie. However, adding up another slide named tried-out words, a significant slide or a weight close half of the pie (**45%**) is achieved.

This means that due to its relatively significant weight, this sub-variable, of total exposure, has not been considered the dominant component, just as the theory says it should be. This weight could have been increased by carrying out a more patient and time-consuming data handling during the processing stage, like duplicating the weighing factors for English Amount, English Variety (of sources), and Tried-out Words. Even without such a refinement, correlation coefficients were very good, but they could have been better by such a sophistication.

The big question on this regard could be: how to assign the weighing factor. One possible criterion to assign weights can be the amount of time dedicated to each activity. For example, separate studies, more likely case studies, should be conducted to **determine, by observation or measurement instead of students' report**, the average time span dedicated by students to several activities, such as “English Exposure Hours”, “Use of Dictionary”, “Time Dedicated to Presentation Rehearsal”, etc. However, not all the indicators are linked to time expenditure, like English Variety (of sources). Still, even facing this kind of challenges, other criteria, methodologies, or numerical-experimental studies like this can be devised to find a sound solution.

Conversely, the best correlation coefficient calculated after several computerized trial-and-error rounds, changing the weights applied to each environmental indicator, can give a better idea of the importance or weights distribution of each indicator. In Statistics these are

specialized and highly computerized studies of numerical nature, useful to predict the results of an experiment or many experiments.

Returning to the pie under discussion, Learning Resources, considered the “second” main sub-variable, is indeed, in this study, the first sub-variable because it weights around **54.5%** of the pie, being this weight distributed in five pie slides, which are Use of Dictionary, Teachers’ Correction to 3rd and 4th-year Students’ Pronunciation, Teachers’ Correction to Students’ Pronunciation Evolution, Use of Electronic Dictionary, and Presentation Rehearsal. This last one would be a better indicator of a third sub-variable, not foreseen and which probably fits better into a third sub-variable category called “**Study Habits**”, which implies a considerable personal component, like willingness and/or motivation.

However, its relative low percentage (5.6%) does not affect that much the correlation. **Teachers’ corrections** to students’ mispronunciations were considered for third and fourth year because their effect in students’ pronunciation is cumulative and didactically very significant (**meaningful learning**).

In correction evolution, it must be noted that an evolution occurs when less words are corrected in fourth year than in third year, otherwise; if equal or higher number of pronunciation corrections occur, there is no improvement and a score of zero is given.

The other two indicators of Learning Resources are Use of Dictionary and Use of Electronic Dictionary, which together make about 26% of the pie. As compared to a traditional dictionary, the use of an electronic dictionary was given a weight twice as much score, because it offers two additional advantages: It allows the student to improve his/her pronunciation by listening to the electronic pronunciation of the word and, at the same time, it allows the student to explore or study more words. This is the descriptive and analytic part of Statistics.

After the previous descriptive Statistics, it is now the analytical Statistics turn by means of regression analyses, of which the same three correlational exercises of heading 4.2 were developed.

Graphs 9a below, corresponding to the largest class group (G-02, 29 students), shows positive non-linear polynomial correlations of **0.85 and 0.79** between Environmental Factors

and EPPA index of vowel sounds, for two different statistical populations of 13 and 15 students, respectively. In contrast, lower correlation coefficients R_s of **0.84** and **0.74** are exhibited in Graph 9b (Appendix K) for the same consecutive statistical populations.

Meanwhile, Graphs 10a and 10b (Appendix K) show lower correlation coefficients of **0.48** and **0.25**, for non-linear polynomial and linear fits, respectively; both fits and plots for 14 students of G-01 of Seminar II.

In Graph 11a below, when adding up the population samples corresponding to both class groups of Seminar II, the non-linear, cubic polynomial correlational coefficients (R_s) considerably improved to values of **0.86**, **0.87** and **0.98** for population subsamples of 15, 17 and 9 students, respectively, which correspond to **lower, intermediate, and upper learning curves**, accordingly. Additionally, this last larger sample size improves the **reliability** of the correlation by means of its larger magnitude. The corresponding lower linear R_s are compiled in Graph 11b, Appendix K.

For compilation and illustrating purposes of the first correlational exercise, Table 9 below, in its last two rows, shows that the sample sizes of 29 and 45 students, belonging to populations of Group 02 and Group 01+02, respectively. This comparative table and other comparative charts ahead show that generally the correlation coefficients of linear type improved with a correlational fit of nonlinear type, in this study, mostly polynomials of third degree and some of second degree.

The penultimate column lists, separated by commas, the sizes of the samples for each of the two probability distributions. The sizes are followed by the corresponding correlational fit types found for each class group. For example, for class group 02, the correlation coefficients R_s of **0.84** and **0.74** of the linear fit (third column and fourth row) correspond to population sizes of 13 and 15 students, respectively (Graph 9b Appendix K). Two linear fits are also consigned in Graph 11b of this appendix for the entire population sample of Seminar II Students.

In a similar fashion, R_s of **0.85** and **0.79** (second column, same row) of the nonlinear polynomial fits correspond to the same population sizes already just mentioned for G02. Graph 9a below shows that these polynomial fits are both of third degree. Meanwhile,

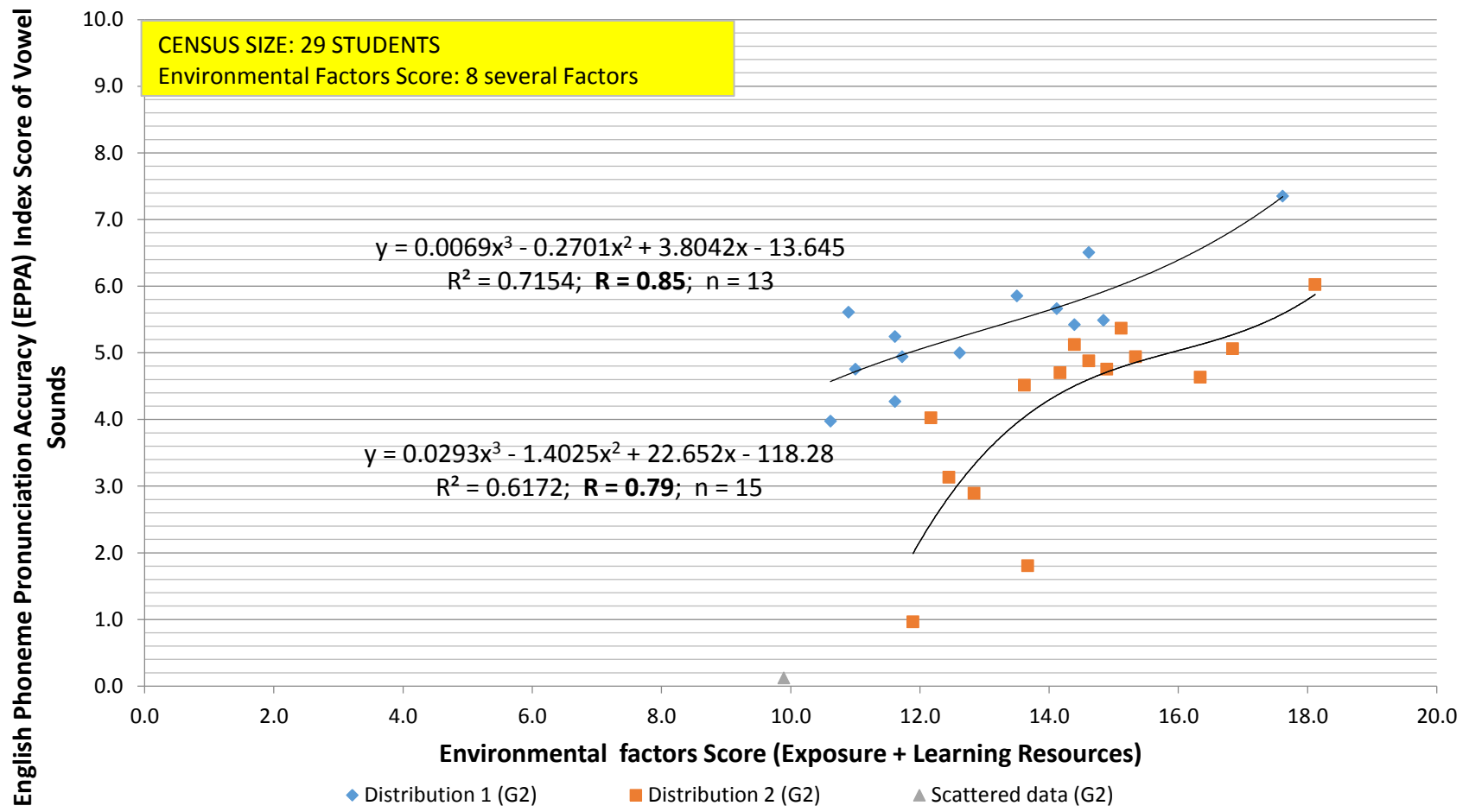
polynomial fits of the same degree are exhibited in Graph 11a below for the whole Seminar II class (G01+G02), united and then separated into three statistical population subsamples of 15, 17 and 9 students. Corresponding correlation coefficients of **0.86, 0.87, and 0.98** were obtained.

Table 9 Comparison between Linear and Non-linear Correlational Fits for Environmental Factors and EPPA Index of Vowel Sounds for Seminar II Students				
Physical Population Sample or class Group	CORRELATIONAL COEFFICIENTS		Statistical Population Sizes (Number of Students)	Graphs number for Non-linear and Linear fit
	Non-Linear Fit	Linear Fit		
Group 01 (16 Ss)	0.48	0.25	14,14	G-10a (App), G-10b (App)
Group 02 (29 Ss)	0.84 and 0.79	0.85 and 0.74	13,15	G- 9a, G-9b (App)
Group 01 + 02 (45 Ss)	0.86, 0.87 and 0.98*	0.84, 0.86 and 0.98	15,17, and 9	G-11a, G-11b (App)

* Alternatively Rs. of 0.76 and 0.86 were obtained when considering two populations of 25 and 16 Ss., respectively.

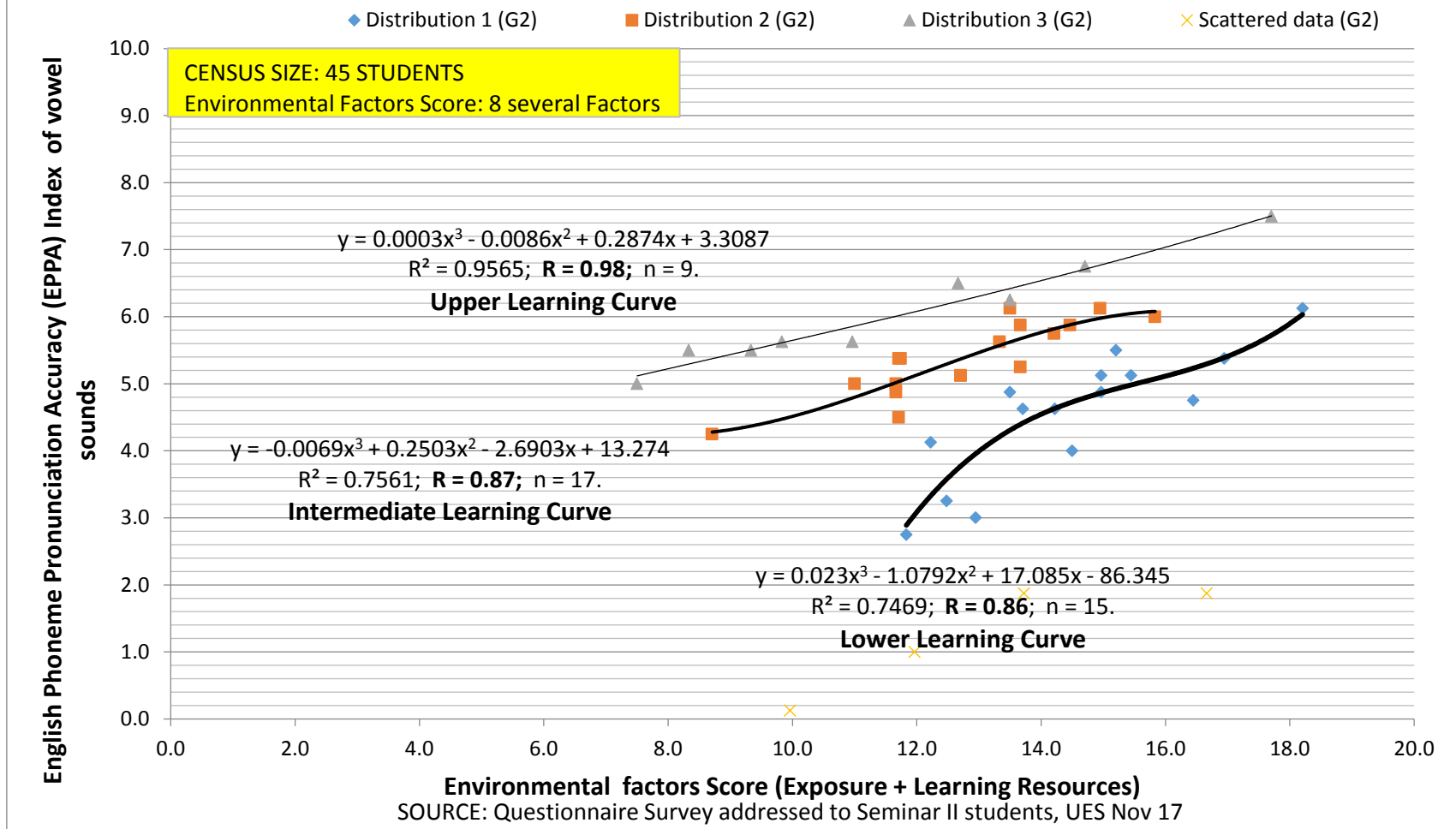
All the graph numbers are listed in the last column. Only Graphs G8a and G10a are presented here and the rest (G9b, G10a, G10b, and G11b) are in the respective Appendix.

Graph 9a Nonlinear Correlations between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-02.



SOURCE: Questionnaire Survey addressed to Seminar II students. UES Nov. 17

Graph 11a Nonlinear Correlations between Environmental Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUPS 01, 02.



Instead of two or three different probabilities, Graph 12 (Appendix K) presents a single probability distribution with a poor correlation coefficient of only **0.62** for class group 01. The small sample size of 16 students made it difficult to distinguish and isolate the two or three types of statistical subpopulations that may be present, according to several probability distributions.

Still, the use of a single probability distribution yields a positive correlation even for the smallest class group 01 (**R=0.48**) of 16 students. This single-population, non-linear type of coefficient does not behave consistently as the size of the population increases. For example, when the population increases from 16 to 29 and 45 students, for class Group 02 and 01+02, respectively, R values of **R=0.52** and **R=0.39** are obtained, as illustrated in **Graph 13** and **Graph 14 (Appendix K)**, correspondingly.

One possible explanation is that there is an optimum number of data for correlation sample size, probably **between 10 and 35 data points or subjects** per probability distribution, below or above which correlation coefficients may decrease, more likely because more data points of distinct probability distributions are included as this upper limit is surpassed.

However, most Rs obtained prove that the choice of breaking the population into two or three probability distributions always improve substantially the quality of the correlations by at least one-tenth or two-tenths, equivalent to 10% and 20%, respectively. Table 9 above sums up comparisons between linear and non-linear correlational fits and how linear fits are improved when substituted by non-linear fits for Seminar II students.

As a third exercise, in an attempt to test the reliability of the third-degree polynomial models, a second population regression was experimented for 50 students. Correlation coefficients of **0.88, 0.90, and 0.67** were found between the two variables under analysis for Teaching Practice II students, for **upper, intermediate, and lower learning curve subgroups** with sample sizes of 12, 16, and 13 students, respectively (Graph 15, Appendix K). Though the correlation coefficients of the lower learning subsample decreased, the mathematical models stand, as cubic polynomials, also, the tendency of the curve families look similar to those of Seminar II.

Going even further, the two populations were added, given their equal levels of EPPA and Environmental Factors. EPPA equality between the two populations was tested for centrality and dispersion in 4.1.3. In this section, the environmental variable has been tested by centrality only by testing the respective means of the populations, which resulted statistically equal. Correlation Graph 16 (Appendix K) illustrates how two correlation coefficients decrease and one increases, as compared to those of Teaching Practice II in Graph 15. Despite these decrements, stability and reliability of the mathematical model has been established. The coefficients Rs. for this new population of 95 students were of **0.80, 0.85 and 0.74**, for **upper, intermediate, and lower learning subgroups** with sample sizes of 25, 33, and 23 students, correspondingly.

In order to substantiate the existence of three probability distributions, it is necessary to relate such probability distributions to environmental characteristics common to the subjects of each subset data and its corresponding learning curve, upper, intermediate, or lower. This foundation was done for the 45 students of Seminar II. On the one hand, there are two common characteristics that most subjects of the Upper Learning Curve satisfy. On the other hand, there are average or global characteristics that distinguishes the three Learning subgroups.

Most students falling into the Upper Learning curve resulted males (89%) and firstborn children (89%), a condition often related to leadership potential and slightly higher IQ than non-firstborns. Also, 89% of the subjects from this subgroup have not had previous English language instruction. Though grades are not index of students' IQ, subjects of this upper curve presented the highest group- average cumulative GPA, which is somewhat corroborative of the higher IQ hypothesis. This is all regarding individual characteristics for the upper curve.

Regarding global, average characteristics of the three learning curves, students belonging to lower, intermediate, and upper curves corresponded to global GPA of 7.5, 7.6, and 7.7, respectively. Therefore, there was a direct relationship between the mean pronunciation grade and the general GPA for each learning curve, thus relating each other.

Unbelievably an inverse relationship resulted between the mean pronunciation grade, inherent to each learning curve, and previous English instruction. In other words, the lower the

previous English language instruction, the better the subgroup's performance in the pronunciation test and therefore, the higher the learning curve. As contradictory as it may sound, pronunciation error fossilization remains a plausible explanation. In numbers, students from the Lower Learning Curve have had the highest global instruction of 21 years which yields a mean value of 3 years of instruction per student. Students from the Intermediate Learning Curve have had the second highest previous instruction of total 17.5 years and a mean value of 2.2 years of instruction per students. Around fifty percent of students from both learning curves have had previous English instruction. From the remaining fifty percent of students grouped under the lower-learning curve, 30% of them have one or more of three advantageous conditions for qualitative or continuous English exposure: nuclear-family relatives abroad, private high school education, or university registration in 2013 which makes them regular, full time students. Adding together the students with these advantages the students with previous English exposure, a total of 80% of subjects is obtained this lower learning curve representing the percentage of students that have had better previous English exposure or better potentiality of it. Consistent with this reasoning, only 65% of students from the intermediate learning curve have had this better previous English exposure or potentiality of it.

In contrast, only eleven percent of students from the upper curve had had previous English exposure through non-formal instruction or potentiality of it.

4.4 Environmental-Personal Factors and EPPA Index of Vowel

Sounds

In a similar pattern, Table 10 below displays a compilation of correlation coefficients between Environmental-Personal Factors (a composite variable) and EPPA Index of vowel sounds. This third independent variable is simply the addition of the first two and it was carried out because sometimes a correlational result can be obtained in the absence of any correlation for the original, uncombined variables, which was not the case anyway, since the original independent variables resulted correlated to the dependent variable of EPPA Index of vowel sounds.

Table 10 Comparison between Linear and Non-linear Correlational Fits for Environmental-Personal Factors and EPPA Index of Vowel Sounds				
Physical Population Sample or class Group	CORRELATIONAL COEFFICIENTS		Statistical Population Sizes (Number of Students)	Graphs Numbers for Nonlinear/linea r fits
	Non-Linear Fit	Linear Fit		
Group 01 (16 Ss.)	0.58	0.19	13	18a (App) / 18b (App)
Group 02 (29 Ss.)	0.81 and 0.86	0.80 and 0.83	17,10	17a / 17b (App)
Group 01 + 02 (45 Ss.)	0.85, 0.94 and 0.83	0.75, 0.93 and 0.78	16,16,10	19a / 19b (App)

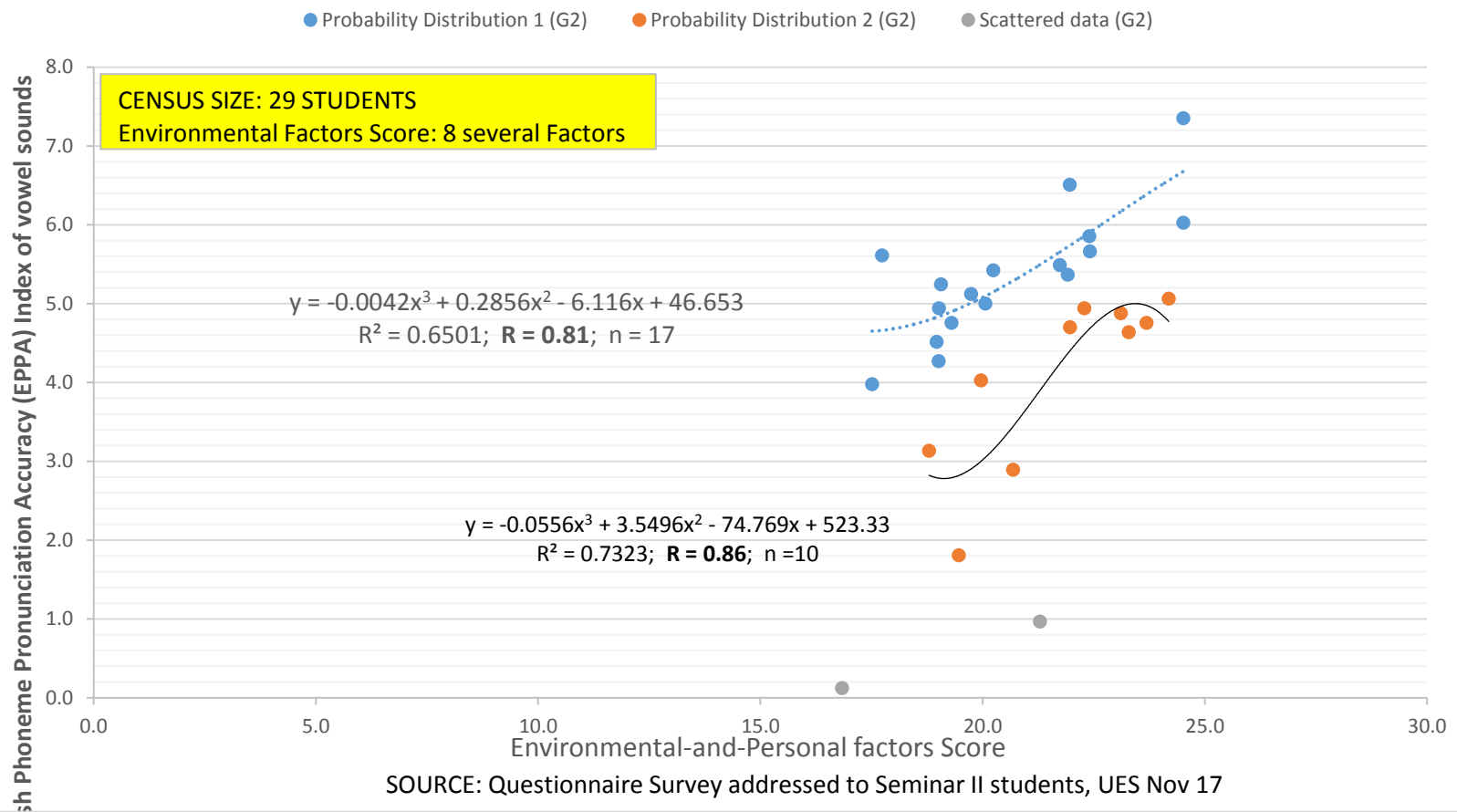
As with the previous two independent variables of previous subheadings, non-linear fits were always quantitatively superior to linear fits, as long as the polynomial degree is not abused, which is using polynomials of higher degrees only if they yield a smooth curve. Also, by comparing the correlation coefficients of the last two rows of the last three tables, by adding up the two independent variables to create a composite variable an averaging process takes place to make even correlations and to filter scattered, unreliable data better. The result is a general improvement of correlations with a higher reliability due to the averaging effect. As listed in Table 10 above, only Graphs 17a and 19a are presented here and the rest of them in Appendix K.

All the Graphs presented have a **type** and a **tendency**. On the one hand, the type of correlation can be linear or non-linear. Though every correlation has also been presented utilizing the literature-most-commonly-used linear fit, non-linear fits have been proved better than linear fits, in this study, generally by polynomial equations of third degree. Additionally, curvy fits are more natural of a Pronunciation acquisition process, which takes place in successively smaller or larger increments, seldom in constant increments, like in the case of a polynomial curve, which convexity concavity is consistent with such types of changing increments.

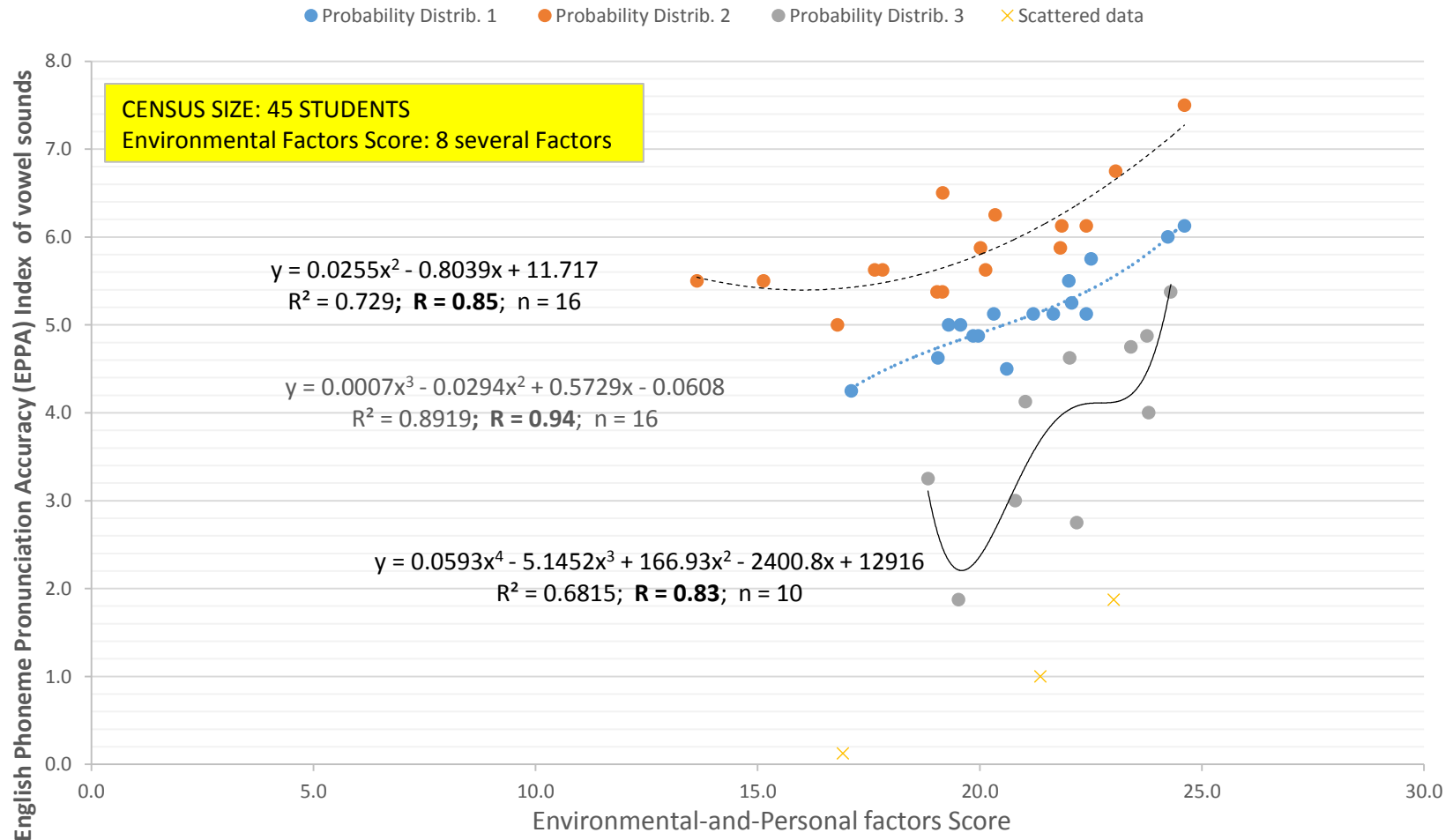
Most polynomial correlational curves were found of third degree but there were also one of second and other of fourth degree (Table 11 below). Higher degree polynomials of fourth and fifth degree were admitted as long as smoothness was not a problem for the range of data observed in the plot. Smoothness should be understood in this study, at least graphically, as the absence of more than one or two ups and/or downs in the curve. In contrast to the polynomial fits of this study, most non-linear correlational fits of a previous study (Peña et. all, 2016) were of logarithmic type. However, they were always of superior quality to their parallel linear fits, which is consistent with the findings of the present research.

On the other hand, the tendency of the relationship can be ever increasingly, ever decreasingly, or composite. A composite tendency would yield even more interesting outputs for the Didactics field, but it would require some more analysis. There are not enough data to do more in depth analysis on this regard. So far, however, the data available and their respective curvy fits reveal a composite tendency for the present research. Conversely, the curvy, logarithmic fits found by Peña et.al. (2016) were ever-increasing in tendency, due to the absence of ups and downs in the graphs.

Graph 17a nonlinear Correlation between Environmental-Personal Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUP 02. Afternoon hours



Graph 19a Nonlinear Correlation between Environmental-Personal Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUPS 01, 02.



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Table 11 Summary of Nonlinear Correlations Taking each Population* Sample as Belonging to Two or Three Separate Probability Distributions. SEMINAR II STUDENTS							
Class Group Popul. sample size (students)		CORRELATION COEFFICIENT (R), SAMPLE SIZE (n), AND STATISTICAL FIT TYPE FOR EACH INDEPENDENT VARIABLE					
		Environmental Factors vs. EPPA Index		Personal Factors vs. EPPA Index		Environmental-Personal Factors vs. EPPA Index	
		(R) _s	(n) _s	(R) _s	(n) _s	(R) _s	(n) _s
01	16	0.48	14	0.63	14	0.58	13
		Polynomial 3 rd degree		Polynomial 3 rd degree		Polynomial 5 th degree	
02	29	0.85, 0.79	13, 15	0.80, 0.70	18, 9	0.81, 0.86	17, 10
		Polynomials 3 rd degree		Polynomial 3 rd degree		Polynomial 3 rd degree	
01 + 02	45	0.89 ⁺ , 0.87, 0.98	15, 17, 9 ⁺⁺	0.82, 0.89, 0.90	10, 14, 17 ⁺⁺⁺	0.85, 0.94, 0.83	16, 16, 10
		Polynomial 3 rd degree		Polynomial 3 rd , 3 rd , and 2 nd degree		Polynomial 2 nd , 3 rd , 4 th degree	

* Each population is divided into statistical populations, implying distinct probability distributions

⁺ Alternatively, this R also abbeys to a quadratic polynomial fit with a **lower R = 0.86**

⁺⁺ These three populations were also tested by being reunited and then divided into 2 statistical populations of 22 and 16 students, with Rs of 0.76, 0.86; and polynomial fits of 3rd degree

⁺⁺⁺ These three populations were also tried out by being reunited and then divided into 2 statistical populations of 22 and 17 students, with Rs of 0.57 and 0.80; and polynomial fits of 4th and 2nd degree

Table 11 above compiles non-linear correlational fits between three independent variables (Personal Factors, Environmental Factors, and Environmental-Personal Factors) and the dependent variable English Phoneme Pronunciation Accuracy (EPPA) Index of vowel sounds for Seminar II students. Each of the three rows show a different sample size of 16, 29, and 45 students, for class groups 01, 02, and 01+02, respectively. The first, lower sample size is statistically insufficient by itself and it is useful when added to the second sample size. For this reason, the corresponding correlation coefficients (**Rs**) are reported for formality but not considered in the comparisons.

In the last three headings, non-linear fits proved to be consistently superior to their parallel linear fits for each of the populations tested. Similarly, except for the smaller sample of 16 students (G01), the two largest populations (last rows) consistently yielded better qualitatively and quantitatively non-linear correlations when relating Environmental Factors than when linking Personal Factors to the dependent variable called EPPA Index of Vowel Sounds, as long as similar population sizes were correlated and assuming equal or similar polynomial degree fitting equations.

Quantitatively, regardless of considering two or three probability distributions for analysis, the environmental variable yielded the **highest Rs**, which ranged between **0.79 and 0.98** (3rd column, Table 11), with an average of **0.87** among five Rs, computed based on the two largest samples of 29 and 45 students. In comparison, R values for the personal variable ranged between values of **0.70 and 0.90** (5th column), whose average is **0.82**.

Qualitatively, since almost 90% of the fitting polynomial equations were of cubic or quadratic type, all fits were judged as smooth for data of the two independent variables, environmental and personal factors, and exception being made for the mixed independent variables of personal-environmental factors (7th column), for which a fourth and a fifth-degree polynomial were obtained.

This superior tendency of the environmental variable is consistent with the results of the unpublished study by Peña & Magaña (2016), where Environmental Factors were better correlated to a seemingly equal EPPA Index than Personal Factors were correlated to the same index, using similar population sizes, for students taking Seminar I and Teaching Practice I, just one semester below the student populations of this study.

The EPPA index used in the other study is said to have been seemingly equal because it included both vowel and consonant sounds as compared to the present study that it comprises only vowel sounds. However, because the mean grade of vowel and consonant sounds resulted equal, the wrapping nature of the resulting correlation coefficients was not significantly affected, since the overall mean grade (consonant and vowels) was as if having used the vowel sound mean grade.

As in the other unpublished research by Peña & Magaña, also in the present research, exception made for G01, the mixed variable Environmental-Personal Factors also improves the polynomial correlations for the two largest populations, G02 and G01+G02 (Table 11 above). In the same table, 2 out of 18 correlational fits are quadratic or second-degree polynomials (**11%**), 14 out of 18 are cubic or third-degree polynomials (**78%**), and only 2 out of 18 (**11%**) are polynomial of higher degree, including fourth and fifth degree. Therefore, many fits were of second and third degree, adding up **89%**, and the third-degree fit resulted the dominant type.

Therefore, quadratic and cubic polynomials have been the most successful fitting models so far. Higher polynomial degree is not advisable, unless enforced by the risk of otherwise obtaining very low correlation coefficients, a situation commonly found in small samples, which was the case in this study for the population of 16 students. In such small samples it is difficult to distinguish and detach the several statistical populations present in them according to the several probability distributions that these statistical populations are likely to follow. This is the most plausible explanation for the smallest sample of 16 students of Seminar II, class group 01 (First row and second column, Table 11)

One last remark, summarized in last row Table 11, is the one exhibited by the entire physical population (G01 + G02), where enhancement of Rs between both independent variables and EPPA Index was achieved when using three Statistical populations instead of two. The Rs tested for a reduced number of two populations are given at the foot of the table for both independent variables, where Rs of 0.76 and 0.86 were obtained for population sizes of 22 and 16 students, for the case of the environmental variable.

In the case of the composite variable, named Environmental-Personal Factors, the division into only two statistical populations was not possible for this same physical

population, unless by means of a detrimental result in R values. It is precisely the existence of three statistical populations what makes it difficult to fit for the small data plot of sixteen students (G-01) into a single probability distribution, for the case of Personal Factors.

Column 7 (Table 11) lists that R values for this third, composite variable ranged between 0.81 and 0.94, with an average of **0.86**. This average did not surpass the average Environmental R of **0.87**. However, R-values gained more reliability although not necessarily more stability because higher polynomial fits, of fourth and fifth degree, were obtained.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

After the research study “A Correlational Study on Personal and Environmental Factors that Hinder Native-Like English Pronunciation of Vowel Sounds in Fourth and Fifth-Year Students at the Western Multidisciplinary Campus of the University of El Salvador, Semester II,2017” has been conducted, the following conclusions and recommendations are made.

5.1 Conclusions

General conclusions present general findings or concepts that are more likely to be extrapolated or compared to other studies, yet no specific details or figures are given. In contrast, specific conclusions serve this purpose.

Regarding the general objective, high nonlinear polynomial correlations on Environmental Factors versus EPPA index of vowel sounds as well as on Personal Factors versus the same dependent variable were found. Therefore, a correlational link has been established between these two independent variables, environmental and personal, and native-like English pronunciation of vowel sounds produced by fourth and fifth year students, particularly for the 45 fifth- year students of the two class groups that registered the subject matter Teaching Practice II and that majored “Licenciatura en Idioma Inglés, Opción Enseñanza”, at WMC, UES, term II 2017. Yet, fifth-year students have been the focus since they represent the final product, to say the least.

Motivation, aspiration, attitude, and personality traits (extroversion, self-awareness, and self-confidence) are important personal factors that resulted very well correlated to the EPPA index in this research project. Exposure to Spoken English and Learning Resources are two important Environmental factors or sub-variables. Indicators experimented for all the previous sub-variables are presented below, in the conclusion regarding specific objectives.

As implied at the beginning in the formulation of the problem, not all the pronunciation problems accountability lays on the students’ side. At least from the concluding perspective ahead, first-glance facts prove that only 30% of the total responsibility rests on the students’

responsibility domain, due to the enrolment of other actors, like researchers and institutions' authorities. For example, only six of the twenty recommendations are directed to students. The remaining ones are heading to researchers, teachers, and institutions. Yet, one might think that students are too much released of their accountability, but further studies are needed to confirm or adjust these findings. Normally, considering only the teaching and learning spheres, anyone can conclude that students share the biggest slice of the pie in terms of academic results responsibility, which could be 70% or more.

5.1.1 General Conclusions

1. The analysis of the 3000 most common words led researchers to picture the occurrence of vowel sounds in such a corpus. The percentages of occurrences could not be that meaningful in the production of the sounds if seen these as simple statistical calculations; however, a deeper analysis can make teachers and students re-plan and redirect the pronunciation teaching-learning process. Thus, teachers will be able to focus on the vowel sounds that represent the higher percentages of occurrence and redirect all the strategies and techniques to make students acquire a more proficient English pronunciation, perhaps not completely native yet native-like to some extent, at least in the biggest chunks of vowel sounds contained in the most frequently occurring words, especially when they totally match the frequency of mispronounced vowel sounds observed in these populations, particularly schwa /ə/ and “short i” /ɪ/.
2. Regarding the two independent variables, Environmental Factors and Personal Factors, in each case, with almost no exception, nonlinear polynomial correlational fits resulted superior than their parallel linear correlational fits, if equal or nearly equal population sample sizes were used. Though its presumable superiority, so far, nonlinear correlations have not been found in literature at hand in the fields of the arts or social sciences.

This result regarding such a higher quality of nonlinear fits over linear ones is consistent with the nonlinear higher-quality logarithmic fits found in other unpublished correlational study on the same variables by Peña & Magaña (2016) for a similar

population sample size of 44 students, embraced by the two class groups of Seminar I (Semester I-2016) at the same educative institution.

3. In general, for the two independent variables, polynomial fits of third or less degree resulted qualitatively better than higher degree polynomial fits in the sense of smoother curves that represent better the nature between the variables correlated, which must be the type of a direct relationship between them instead of an inverse relationship.

This direct relationship must be ideally observed in the whole range of the variables under study, which means that an increase on the independent variable (horizontal axis) produces an increment in the dependent variable (vertical axis). In contrast, an inverse relationship implies a decrease for each increase. Higher polynomials degree, from fourth on, were taken into consideration only when they do not introduce clear inverse relationships for any reach of the graph. Inappropriate fits were disregarded by graphical inspection because they look bumpy or with crest(s) and valley(s) that cause such an inverse relationship, even in small reaches.

4. In general, the independent variable called Environmental Factors yielded better correlation coefficients than the other variable named Personal Factors when contrasted, both, to the dependent variable EPPA Index of vowel sounds. Also, the quality of the correlations of both independent variables remained or improved by adding up or averaging their scores and then correlating this total or average to the dependent variable. This is probably a synergic enhancement of the two independent variables that was also found in a similar research by Peña & Magaña, cited in the previous conclusion.

5. The size of the three subsample statistical populations that corresponded to distinct probability distributions ranged from 9 to 18 students, which were like the sizes obtained in the other study cited twice above. However, these correlational subsamples resulted from samples sizes between 45 and 50 students. For the last sample size of 95 students, experimented as part of a third regression exercise, correlational subsamples between 23 and 33 and between 18 and 40 were obtained for the Environmental-Factors variable and the Personal-Factors variable, correspondingly. These larger sample correlations proved polynomial models' reliability, particularly cubic

polynomials' reliability, though they yielded slightly lower correlation coefficients, yet high enough, being all of them higher than 0.80.

6. For both independent variables, environmental and personal, the three data subsets referred to in the previous conclusion have been identified as lower, intermediate, and upper learning subgroups, each of which corresponds to a progressively higher subgroup average pronunciation grade. Also, each learning level subgroup corresponds to a different curvilinear graph, all the graphs mathematically being polynomials, most of them of third degree, so called cubic polynomials.

The several subgroups not only follow a presumable distinct probability distribution, but also obey to distinguishable environmental and social preconditions that affect the graph patterns.

Unexpectedly and paradoxically, when analyzing the environmental-pronouncing binomial, the higher the previous English language instruction or other educational pre-advantage of the subgroup, the lower the subgroup average pronunciation grade and, consequently, the lower the learning curve. Pronunciation error fossilization, excessive self-confidence, or both remain plausible explanations.

In contrast, related to the personal-pronouncing binomial, the better the access to ICT tools, infrastructure, and services, the higher the average pronunciation grade of the subgroup and the higher the learning curve.

5.1.2 Specific Conclusions

7. In relation to the results of the pronunciation evaluation through a written EPPA Index test of vowel sounds, one difference between the 2016 and the 2017 class is that, in the former correlational study, nonlinear fits were smoother and logarithmic instead of the polynomial ones of the present research. Another distinction is that the former research the passing grade rate for the EPPA Index of vowel sounds was 55% instead of the 17.8% of the present study.
8. Based on the results obtained in the questionnaire-survey, for fourth to seventh semester, Seminar II (fifth-year) and Teaching Practice II (fourth-year) students used the dictionary in a 64% and 59% of the time, respectively. It is noteworthy that this

five-year students' population uses the appropriate, more-familiar dictionary with IPA system in a 49% while the four-year students' population in a 41%.

9. Only 55.6% of the students reported to practice the habit of looking up presumably-already-known-pronunciation words in the dictionary for pronunciation reassurance purposes, before their presentations during third year. However, when asked to list examples of words looked up for their last presentation of the current term, 46.7% of the students were able to list an average of 2.1 words and only 13.3% could write the corresponding vowel phonemes of these type of words, which is 6 out of 45 students. Though this result might be related to the 11.1% corresponding to one of the 9 types of intelligences and the respective learning style (See 4.1), it could also be indicative of low rate of meaningful pronunciation learning on the students' side.

Example of such words with failing grade rates (50%-59%) of short or reduced vowel sounds in the written test were: **did, will, should**; and **again**, while examples of lower rates, slightly above 30% or below it, were **good, success, campus, and focus** (Graph 3 Ch. 4). These words are so common in everyday conversations or presentations that students erroneously assume to be completely knowledgeable of them when it comes to vowel phoneme pronunciation accuracy. The results have proved the contrary. Even more outstanding are the lower accurate pronunciation rates registered from spoken English during the class observation period, when students' project presentations were observed and recorded and where rates less than half the lower rates of the written test were documented. This means that fluid speech is even more demanding, mainly because students are more focused on fluency and grammar (Syntax) of the speech than on its accurate pronunciation.

10. Mathematically, the correlational fits of both variables for the entire population of 45 students that registered Seminar II were defined as polynomials, which mostly ranged (**88.8%** of the times) between second and third degree, being the majority of third degree (**77.7%** of the times) [see Table 11 in 4.4]. Graphically, the correlations can be considered as nonlinear, which means that the graph is a curve instead of the usual straight line. The linear fit is found in most research papers or thesis belonging to the domain of social sciences or arts.

11. A positive, direct, and high nonlinear correlation between PERSONAL FACTORS and English Phoneme Pronunciation Accuracy (EPPA) Index of vowel sounds was found for the students already defined in conclusion 1. The nonlinear polynomial correlations for the two class groups, taken as one population, yielded correlation coefficients of **0.90, 0.86 and 0.82**, for three probability distributions of 16, 15 and 10 students, respectively.
12. A positive, direct, and high nonlinear polynomial correlation between ENVIRONMENTAL FACTORS and EPPA Index of vowel sounds was found for the same students, place, and time explained in conclusion 1. Also, in every case, the quality of the nonlinear correlational fit is always better than the linear correlational fit, as proved by the higher correlation coefficients.
The nonlinear polynomial fits for the two class groups, taken as one physical population, resulted in correlation coefficients of **0.86, 0.87, and 0.98** for three probability distributions of 15, 17, and 9 students, respectively.
13. A positive, direct, and high nonlinear correlation between PERSONAL-ENVIRONMENTAL FACTORS and EPPA Index of vowel sounds was found for the same students, place, and time explained in conclusion 1.
The nonlinear polynomial correlation coefficients found for the three populations, taken as one population, are **0.85, 0.94, and 0.83**, respectively; and, the corresponding sample sizes were **16, 16 and 10** students.
14. Regarding the research questions, it has been found that English Phoneme Pronunciation Accuracy (EPPA) Index of vowel sounds of the student, already located in space and time, is significantly affected by PERSONAL FACTORS, such as motivation, aspiration, self-confidence, and self-awareness. The same dependent variable is also seriously affected by ENVIRONMENTAL FACTORS, such as English Exposure and Learning Resources.
15. Regarding the HYPOTHESIS, this has been found true. That is, a significantly high correlation has been found between the two independent variables, Personal and Environmental Factors, and EPPA Index of vowel sounds (dependent variable). A correlation by itself does not necessarily mean dependence. However, by using cross-information from researchers cited in the theoretical framework, we can conclude that

a high dependence is very feasible between the two proposed independent variables (individually or combined) and the dependent variable, not only due to the successively high correlations of this research but also due to the international research, especially case studies, which have proposed a dependence.

5.2 Recommendations

5.2.1 Future Researchers should:

1. Carry out pertinent studies, preferably action research and case study types, oriented to measure and improve pronunciation accuracy levels in EFL environments inside native Spanish speaking countries like ours, for which electronic information on this regard is scarce or inexistent. Virtual EFL (English as a Foreign Language) studies on pronunciation that were consulted have their origin in Europe, Asia, or the Middle East. Authors consulted on pronunciation topics for ESL or bilingual environments of the US seem to take pronunciation accuracy for granted and consequently out of the equation, even in oral proficiency tests, of which fluency is the main indicator. Therefore, Latin American universities are compelled to conduct their own research to build the pertinent theory on the several pronunciation accuracy issues, of which the dichotomy accuracy-fluency is central. About it, some questions that seem to remain unanswered for EFL environments are: How one affects the other? Are they synergistically or mutually-diminishingly related? Which one goes first, and which one should go first?
2. Conduct other research studies on English pronunciation accuracy that focus on suprasegmentals instead of only segmentals or phonemes, all of it, in order to supplement or improve the qualitative results of this study.
3. Carry out further correlation experiments using the data gathered in this study, especially between Environmental Factors and English Pronunciation Accuracy. Better correlations can be obtained by assigning a higher weighing factor to the sub-variable English Exposure, which did not get a sufficient slice of the pie during this study.
4. Conduct a more in-depth analysis of the 3000 most common English words (**Appendix F**) in order to classify them from basic to advance vocabulary to ease its application to

pronunciation teaching and learning, either through the several intensive English levels or through conversational courses, or both. The occurrence of such words in authentic materials could be a good start in such a word-level stratification task. A better start in such an endeavor can be the word level classification according to the Common European Framework of Reference for Languages. The Cambridge dictionary is the only one, of the dictionaries at hand to this team, which contains such a classification.

5. Assemble further studies to determine the type of probability distribution followed by each statistical population, regarding the three different probability distributions found into the students' physical population, under which the three investigated correlations were fit. There are numerous probability distributions and the corresponding tests to determine them. However, in general this is a mathematical specialty. Therefore, an interdisciplinary investigation might be needed.
6. Conduct parallel or subsequent studies, which are highly recommended to establish criteria to compute weighing factors, which are to be applied to indicators that belong to the environmental factors domain that affect English Phoneme Pronunciation Accuracy, particularly regarding Learning Resources and Study Habits.
Research should go beyond students' information report by otherwise obtaining more reliable information on measurements of the time devoted by students to several activities regarding study habits, learning resources, and English exposure; more likely by means of case studies that aloud gathering data through in-situ observation, key informants like students' parents and friends, or software that measures and record English pronunciation and time spent on social networks by students, just to mention some.

5.2.2 Students should:

7. Be self-taught students, design their own holistic pronunciation strategy according to their needs, take approach of the material that they get in advance, and make use of a dictionary with American English and IPA symbols, as well as of other Information and Communication Technologies ICT Tools like pronunciation software, web pages, or web sites, as well as smartphones.

Some free web pages like **toPhonetics.com** turn text into phonetical-symbol transcriptions. This way, last year students can transcribe efficiently, at once, full paragraphs or chapters, to be presented as their term projects, in order to ensure correct pronunciation, even for those words they consider as already-known pronunciation words, which indeed are often fossilized words whose pronunciation has been learned erroneously (see **recommendation 11**). As a starting point, YouTube links of pronunciation videos are presented in **Appendix L**.

Also, communitarian web-sites like **Busuu.com** offer the potential to find exchange conversation partners, who are native speakers of English interested in learning Spanish and, in return, willing to partner in English.

8. Choose a specific pronunciation target at once instead of a general one to practice their English pronunciation. For example, focus on vowels sounds during a specific period and then on consonant sounds, according to their needs, identifying, with the **teacher's help**, their weaknesses and strengths to realize in which area they should practice more.

It is even preferable to focus first on a reduced number of vowels, which according to our research can be two or three vowels simultaneously. It is advisable to start, as in this study, with the three reduced vowels schwa /ə/, schwi /ɪ/, and schwu /ʊ/. Then, continue with a different chunk, for which the vowel sounds /æ/ and /e/ are advisable (see end of 4.1 and **Appendixes F and J**). Focusing on a new set of vowels does not mean forgetting about the previous one(s); instead, previous chunks must be practiced further from time to time in a cumulative way along with the new one.

9. Be exposed to spoken English a minimum of **35.5 and 47** hours a week, during their fourth and fifth year of the major, respectively. These figures correspond to the mean values for the sample populations of 50 and 45 students. The recommendable ranges are between **55 and 80** and between **75 and 100** hours a week, for fourth and fifth-year students, correspondingly. These figures correspond to the mean value plus one and two standard deviations (See **Table I-3, Appendix I**).

This quantitative recommendation is based on statistical figures, specifically mean and standard deviation (see tabulated data for both class groups, **Appendix H**). The lower value of the range corresponds to one standard deviation above the mean value

10. Look up in an English- English dictionary an average between **13 and 19 words** before presentations or practicum classes. According to statistics of this study, such figures corresponds to one and two standard deviations above the mean value of **8 words** per presentation, which is related to higher English Pronunciation Accuracy and which was the average for the 2017 class reported by 45 students of Seminar II and for the 2016 class reported by 44 students of Seminar I.
11. Get accustomed, as much as possible, to using electronic dictionaries to look up not only unknown-pronunciation words but also **presumably—known-pronunciation words**, which are common words of everyday or every-presentation compulsory use, where most vowel pronunciation errors were detected very frequently during this research, not only in the written test but also in spoken English during the class observation period. Also, by triangulation, students from both populations reported the same common or frequent words as pronunciation troublesome, as observed in their peers (**Appendix J**).

Students get benefit of an e-dictionary by listening to the accurate sounds and by accurately reproducing them by reading the phonetical symbols, this way also checking more words faster.
12. Be exposed, as much as possible, to native speakers that can be at hand by the internet.

5.2.3 Teachers should:

13. Teach suprasegmentals first and then segmentals (phonemes) only when students are prepared for the latter, after a long time, which may take one or two semesters. This way, students can assimilate English language in a less mechanized way, easing comprehensibility for the listener and fluency for the speaker, simultaneously diminishing his/her accentedness. There are successful examples from this teaching order reversion in curricula, referenced in chapter 2. It seems that focusing on the English “music” is a natural and stress-free way of internalizing prominent segmentally and suprasegmentally-related features, like the vowel sound schwa (**see 2.10**).
14. Apply the results of the research to pronunciation teaching and learning, as exemplified in next recommendation.

15. Have students successively learn the pronunciation of the 3000 most common English Words through several semesters, since the Basic English levels and up to advanced levels, either intensive or conversational. By accurately learning these words' pronunciation, isolated and then contextually, students will be able to understand and participate in about 90% of native and native-like conversations and written English (**See Appendix F**).

Previous planning or studies are highly advisable to efficiently obtain several word strata according to the several English levels (See first recommendation to future researchers). Also, continuous monitoring and correction of these 3000 most frequent words is mandatory throughout the major.

16. Correct any student's incorrect words for pronunciation improvement, either after presentations or oral tests, focusing equally on every student along the major. This is because an average of 64.5% of the two populations that were sampled in 2017 (**2nd category, Table I-4a**) reported having been corrected enough for pronunciation after their presentations in third year, which leaves a **35.5%** that considered themselves as not corrected enough. Statistically, teachers should correct, by means of individual post-class feedback, at least **7 words** per presentation, yet a range from **12 to 18 words** is highly recommended (**3rd category, Table I-4a**). Consistent with this, many students suggested changes requesting more correction in class and after oral tests (see third paragraph from **Table I-2** down).

In contrast, only **9.5%** of the same populations (**5th row, Table I-4a**) reported not being corrected enough by the cooperating teachers, after their practicum classes. Still, it is strongly recommendable that cooperating teachers increase the number of words corrected for pronunciation as much as possible, during the post-class feedback. Statistically, such teachers should correct a minimum of **4 words** per practicum class, yet a range between **7 and 11 words** is highly recommended (**4th category, Table I-4a**).

17. Implement a virtual classroom to develop activities and deliver contents in case of any recent environmental phenomena as hurricanes or earthquakes, as well as social news and studies. In this manner, students will have, at low cost, contents in advance and teachers won't have any trouble to cover contents in a hurry.

18. Be eligible for scholarships to receive professional development in pronunciation teaching on a voluntary but properly funded basis, as they serve as models for students, and receive such tuition as part of their teaching courses from different pronunciation specialists, preferable natives. As an example, recent studies reveal that European EFL teachers need improvement on this regard (see **2.10**), despite the fact that they devote a high percentage of their classes to pronunciation teaching, worldwide, which is known to be of **25%**, even with the presumable advantage of speaking Germanic-branched languages, somewhat closer to English than Romance-branched languages like Spanish.
19. Promote curricular changes necessary to allow more pronunciation courses, either isolated or applied to intensive and/or conversational subjects, as requested by most students of both subjects through the questionnaire-survey. Also, endorse programmatic changes to assign more weekly hours to intensive and conversational courses in order to have more allotted time for post-class personalized feedback to correct students' pronunciation errors made during presentations, keeping records of the number and type of errors (see **recommendation 15**).

5.3.4 University authorities and Funding Institution (government) should:

20. Design and assign, respectively, increased budgetary funds for the Foreign Languages Department to improve all the areas of the major. It is an investment, not only in urgent infrastructure, but also in human resources, as the major "Licenciatura en Idioma Inglés Opción Enseñanza" is one of the most demanded majors. Among the specific needs, it can be mentioned: a better equipped language laboratory, with acoustic characteristics, more classrooms to reduce the size of class groups, and more teachers to attend the resulting increased number of class groups.
21. Promote an equitable distribution of funding among campuses and departments, avoiding the prominence of the centralization that affects, for example, some teachers, overloading them academically, as in the case of the Western Multidisciplinary Campus. Also, underpayment and delayed payment until the end of the term, consequence of constrained funds, are big disincentives for hourly-hired teachers, which ultimately affect students.

22. Approve the financial increments mandatory for curricular changes, which imply both, incremental post-class time allotted to students' individual feedback in existent subjects and additional subjects for instruction on pronunciation, according to recommendations 14 and 17, respectively.

REFERENCES

- Anjomshoa, L. and Sadighi, F. (2015). The importance of motivation in second language acquisition. *International Journal on Studies in English Language and Literature (IJSELL)*. Vol. 3 pp 126-137.
- Bright, W. (nd). Linguistic Society of America [LSA]. What's the difference between speech and writing? Retrieved November 08, 2015 from <http://www.linguisticsociety.org/resource/whats-difference-between-speech-and-writing>.
- Byers E. and Yavas M., 2017. Vowel reduction in word-final position by early and late Spanish-English bilinguals. *PLoS One* 2017, 12(4): e0175226.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5383264/>
- Carrio-Pastor, M. & Mestre-Mestre, E. (2014). Motivation in Second Language Acquisition. *Procedia - Social and Behavioral Sciences*. 116. 240–244. 10.1016/j.sbspro.2014.01.201.
- Case, A. (2012). Pronunciation Problems For Spanish-Speaking Learners Of English. Retrieved October 15, 2015 from <https://www.tefl.net/elt/articles/teacher-technique/spanish-speaker-pronunciation-problems/>
- Cook, V. (1991). *Second language learning and language teaching*. London: Edward Arnold.
- Delaney, R. (n.d.). *American Dialects: Dialect map of American English*. Retrieved January 20, 2018, from <http://robertspage.com/dialects.html>
- Eaton, S. E (2016). *How Long Does It Take to Learn a New Language? Learning, Teaching, and Leadership (a blog for educators, researchers, and other thinkers by Sarah Elaine Eaton, Ph.D.)*. Retrieved on Jan. 24, 2019 from <https://drsaraheaton.wordpress.com/2011/02/20/how-long-does-it-take-to-learn-a-new-language/>
- El sonido vocal /ə/ (Schwa) como en “ago” - Pronunciación del Inglés Americano. YouTube video. Retrieved on September 15, 2017 from: <https://www.youtube.com/watch?v=m1mDSUSwNls>

- English Speak Like a Native [ESLAN] (nd). Retrieved November 07, 2015 from <http://englishspeaklikenative.com/resources/common-pronunciation-problems/spanish-pronunciation-problems/>
- Gardner, R.C. (1982). Language attitudes and language learning. In E. Bouchard Ryan & H. Giles (Eds.), *Attitudes towards language variation* (pp. 132-147). London: Edward Arnold.
- Gilakjani, A., Ahmadi, S., & Ahmadi, M. (2011). Why is Pronunciation So Difficult to Learn? *English Language Teaching*, 4(3). doi:10.5539/elt.v4n3p74
- Hahta, K., Butler, Y. G., & Witt, D. (2000). How Long Does It Take English Learners to Attain Proficiency? Stanford University. The University of California Linguistic Minority Research Institute Policy Report 2000- 1. Retrieved January 24, 2019, from <https://web.stanford.edu/~hakuta/Publications/%282000%29%20-%20HOW%20LONG%20DOES%20IT%20TAKE%20ENGLISH%20LEARNERS%20TO%20ATTAIN%20PR.pdf>
- Hassan, B. A. (2001). Extraverion/Entroversion and Gender in Relation to the EnglishPronunciation Accuracy of Arabic Speaking College Students. Retrieved from ERIC database. (ED454740)
- Henderson A., et. al. (2012). *Research Language*, 2012, Vol 10.1. The English Pronunciation Teaching in Europe Survey: Selected Results.
- Hudson, R. (nd). Centre for Languages Linguistics and Area Studies (CLLAS). Some issues on which Linguists can agree. Retrieved October 07, 2018, from <https://www.llas.ac.uk/resources/gpg/135>. Originally published in the *Journal of Linguistics* 17:179 (1981) under the title "83 things linguists can agree about", reproduced by kind permission of Cambridge University Press.
- *International Journal on Studies in English Language and Literature (IJSELL)* Volume 3, Issue 2, February 2015, PP 126-137 ISSN 2347-3126 (Print) & ISSN 2347-3134 (Online) www.arcjournals.org
- Jahandar, S., Khodabandehlou, M., Seyedi, G., & Dolat, R. M. (2012). A Gender-based Approach to Pronunciation Accuracy of Advanced EFL Learners vol. 3

- Retrieved October 12, 2017, from <https://www.ijser.org/researchpaper/A-Gender-based-Approach-to-Pronunciation-Accuracy-of-Advanced-EFL-Learners.pdf>.
- Jilka M., 2000. Testing the contribution of prosody to the perception of foreign accent. University of Stuttgart. Germany
<https://pdfs.semanticscholar.org/d980/db8a35b5b32ee626f1f08242a1fc1f93121c.pdf>.
 - Kanioková Z., 2014. Segmental and Suprasegmental Properties of the English of Slovak learners Master's Diploma Thesis. Masaryk University Faculty of Arts. Department of English and American Studies. Slovakia.
https://is.muni.cz/th/giqoq/MA_thesis.pdf
 - Kassaian, Z. (2011). Age and Gender Effect in Phonetic Perception and Production. *Journal of Language Teaching and Research*, 2(2). doi:10.4304/jltr.2.2.370-376
 - Kenworthy, J. (1987). *Teaching English Pronunciation*. (1st ed.). United Kingdom: Longman Group UK Limited.
 - Kreidler, C. W. (2004). *The pronunciation of English: A coursebook* (2nd ed.).
 - Kelly G., 2012. *How to teach pronunciation*. Fourteenth impression, first published 2000. Series editor: Jeremy Harmer. Pearson Education Limited 2000. Harlow, England.
 - Kennedy, G. (1973). *Conditions for language learning*. Retrieved on November 18, 2015, from www.melta.org.my/ET/1991/main3.html
 - Koosha, M., Yakhabi, M. (2013). Problems Associated with the Use of Communicative Language Teaching in EFL Contexts and Possible Solutions. *International Journal of Foreign Language Teaching and Research*, 1(2), 63-76. http://jfl.iaun.ac.ir/article_4185_0.html
 - Koster M and Cutler A, nd. Segmental and suprasegmental contributions to spoken-word recognition in dutch. Max Planck Institute for Psycholinguistics. TheNetherlands.<https://pdfs.semanticscholar.org/7187/839e430a9fc91f8c3b45d67889fa4f2a7111.pdf>
 - Laroy C., 2012. *Pronunciation*. Resource Books for Teachers. Series editor Alan Maley. Reprint of first publication in 1995. Oxford University Press. New York

- Lightbown, P., and Spada, N., (2013). How Languages Are Learned. Oxford University Press. Print.
- Malden, MA: Blackwell Publishing.
- Macaro, E., (2010). Continuum Companion to Second Language Acquisition. London: Continuum Print. Taken from <http://esl.fis.edu/teachers/support/factors.htm>
- NIST (National Institute of Standards and Technology), ND. Statistical Engineering Division. Difference of Trimmed Means. Retrieved November 13, 2017 from: <https://www.itl.nist.gov/div898/software/dataplot/refman2/auxillar/difftme.htm>
- Pearson Longman (2009). Longman Communication 3000. Longman Communication 3000, 1-16. Retrieved June 4, 2018, from http://sope.ruc.edu.cn/upfile/image/1385030167_1577.pdf
- Peña A., Rincán M., Arévalo J., Cuellar J., Vásquez L., García L. (2016). “IMPROVEMENT IN ENGLISH PRONUNCIATION ACCURACY OF Intensive Intermediate English I students, group 02 at THE WESTERN MULTIDISCIPLINARY CAMPUS, UNIVERSITY OF EL SALVADOR, semester II 2016” Action Research Study
- Pronuncian: American English Pronunciation (nd). #157: Native French speakers special! The top 10 errors made by native French speakers. Retrieved October 07, 2015 from <http://pronuncian.com/Podcast/Default.aspx?Episode=157&Language=>
- Pronunciation studio (nd). 10 English Pronunciation Errors by French Speakers. Retrieved November 07, 2015 from <https://pronunciationstudio.com/french-speakers-english-pronunciation-errors/>
- Rocklin, T. and Revelle, W. (1981). The measurement of extraversion: A comparison of the Eysenck Personality Inventory and the Eysenck Personality Questionnaire. British Journal of Social Psychology, 20, 279-284. Great Britain. Retrieved on October 18, 2015, from <http://www.google.com.sv/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAAahUKEWjdkeL3rpvJAhXKwiYKHc20Bag&url=http%3A%2F%2Fwww.personality-project.org%2Frevelle%2Fpublications%2Frr81.small.pdf&usg=AFQjCNEmds2mWUn7gy3Rd7x54sHLVUqS1w&sig2=OMQrpzoSkhCEbxX5gFaD4w>

- Schoonjans, F. (2018, September 07). MedCalc statistical software. Retrieved September 20, 2018, from <https://www.medcalc.org/index.php>
- Singer, J. (2006). Uncovering Factors That Influence English Pronunciation of Native Somali Speakers. Retrieved October 15, 2015 from Stress and Vowel Reduction in English, nd. https://en.wikipedia.org/wiki/Stress_and_vowel_reduction_in_English
- Smith, B. T. (2012, May 12). The Elusive English Schwa. Retrieved September 12, 2017, from <http://dialectblog.com/2011/06/29/the-elusive-english-schwa/>
- Suzukida Y., 2017. Examining the Segmental and Suprasegmental Correlates of the IELTS Pronunciation Scale. British Council ELT Master's Dissertation Awards: Commendation. Birkbeck, University of London. British Council. https://englishagenda.britishcouncil.org/sites/default/files/attachments/mda2017_birkbeck_university_of_london_yui_suzukida.pdf
- The Mayers and Briggs Foundation (n.d.). Adapted from Looking at type: The Fundamentals by Charles R. Martin (CAPT 1997). Retrieved on October 18, from <http://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/extraversion-or-introversion.htm>
- The Ponsci English Rectangle Charts. Part II Using Advanced Features, nd. [www.pronsci.com.file:///C:/Users/USUARIO/Downloads/Using%20advanced%20features.pdf](http://www.pronsci.com/file:///C:/Users/USUARIO/Downloads/Using%20advanced%20features.pdf)
- Tikkakoski S. (2015). Communicative language teaching as English pronunciation teaching method: Developing exercises. Bachelor's seminar and thesis. University of Oulu. <http://jultika.oulu.fi/files/nbnfioulu-201602031107.pdf>
- Tomilson, C.A. and Allan, S.D. (2000). Leadership for differentiating schools and classrooms. Retrieved on November 19, 2015, from blog.betterchinese.com/differentiated-instruction
- Trimmed Mean, ND. Retrieved on November 13, 2017 from: <http://www.d.umn.edu/~yqi/stat3611/trimmed.pdf>

- Vergun, A. (2006). A Longitudinal Study of the Acquisition of American English Vowels (Master's thesis, Portland State University, 2006). Portland. Well J. John Well's Phonetic Blog, 2009. <http://phonetic-blog.blogspot.com/2009/09/weak.html>
- Vowel Sound /i/ as in "it" – American English Pronunciation [updated]. YouTube video. Retrieved on September 15, 2017 from: https://www.youtube.com/watch?v=Ok_HG-0lNCA&list=PLYJV5Moz9cfzjvOs8X4dOSrpMGHZL9mSo&index=3
- Will We All Be Speaking Chinese In The Future? (2015). Retrieved October 13, 2015 from <http://www.chinasimplified.com/2015/04/03/will-speaking-chinese-future/>
- Yadav, M. K., Dr. (2014). Role of Mother Tongue in Second Language Learning [Abstract]. International Journal of Research (IJR), 1(11-12-2014), 2348-6848, 1-11. doi:10.1.1.892.7707&rep=rep1&type=pdf
- Yoshida, M. T. (2016). Beyond repeat after me: Teaching pronunciation to English learners. Alexandria, VA: Tesol Press. Retrieved January 15th, 2018 from: http://teachingpronunciation.weebly.com/uploads/9/5/9/1/9591739/understanding_and_teaching_the_pronunciation_of_english-16pt.pdf
- Zhang, F. And Yin, P. (2009). Asian Social Science, Vol 5, No 6, June 2009. A Study of Pronunciation Problems of English Learners in China. Retrieved October 06, 2015 from ccsenet.org/journal/index.php/ass/article/view/2490.

APPENDIXES

Appendix A: Vowel-Phonetic Analysis of the 3000 Most Common English Words in Speaking and Writing According to Longman Communication 3000

The Longman Communication 3000 is a list of the 3000 most frequent words in both spoken and written English, based on statistical analysis of the 390 million words contained in the Longman Corpus Network – a group of corpuses or databases of authentic English language. The Longman Communication 3000 represents the core of the English language and shows students of English which words are the most important for them to learn and study in order to communicate effectively in both speech and writing. Longman (2009).

The vowel phonological analysis of the 3000 most common English words was based on the online version of Cambridge Dictionary, and it gave researchers reliable information of the percentage of occurrence of vowel sounds. This analysis was divided into two main categories, taking every vowel sound as one occurrence by the universe of words no matter the times it appeared in the word, and taking every occurrence by the universe of vowels.

Researchers conclude that schwa /ə/ is the most common vowel sound, since it appears in the 29.5% of words; however, considering eluded schwas, its percentage increases to 45.6%. Eluded schwa must be understood as another type of schwa of shorter duration than the normal schwa, mostly found in suffixes as -tion, -able, -en. For example, in the word communication /kə,mju:.nə'keɪ.ʃn/, the first two schwa vowel sounds are examples of “normal length schwas”, which in turn are the most abundant. The last upper index schwa is an example of an eluded schwa. Therefore, a simpler way of presenting the already mentioned percentages is saying that 3 out of 10 words and 9 out of 20 words contain normal-duration schwas and total schwas, respectively, understanding that total schwas include both normal-duration and short-duration schwas.

The second most common vowel sound is the “short I” /ɪ/ which is found in 27.1% of the words, one or more times in each word. Relating the percentages of these two vowel

sounds (45.6% and 27.1%), it is inferred that more than the half of the universe of words are either schwa /ə/ or “short i” /ɪ/. Therefore, a good production of these sounds is a good indicator of English pronunciation accuracy. The percentages cannot actually be added because they are not statistically independent, which is better explained by the fact that some words contain both vowel sounds so that, if directly or totally added up, duplicity would occur.

Besides these two reduced vowel sounds, there is a third reduced vowel sound whose percentage of occurrence according to **Table F-1** below is lower than the other two, but its frequency of use or dynamic occurrence is much higher than the “static” type of occurrence given by the table (only 1.4%). In other words, /ʊ/ appears in high usage or high frequency words, such as the modal auxiliaries “should, would, and could” or in every-conversational or every-greeting word, like “good.” These last words determine in a significant way the English pronunciation accuracy of speakers.

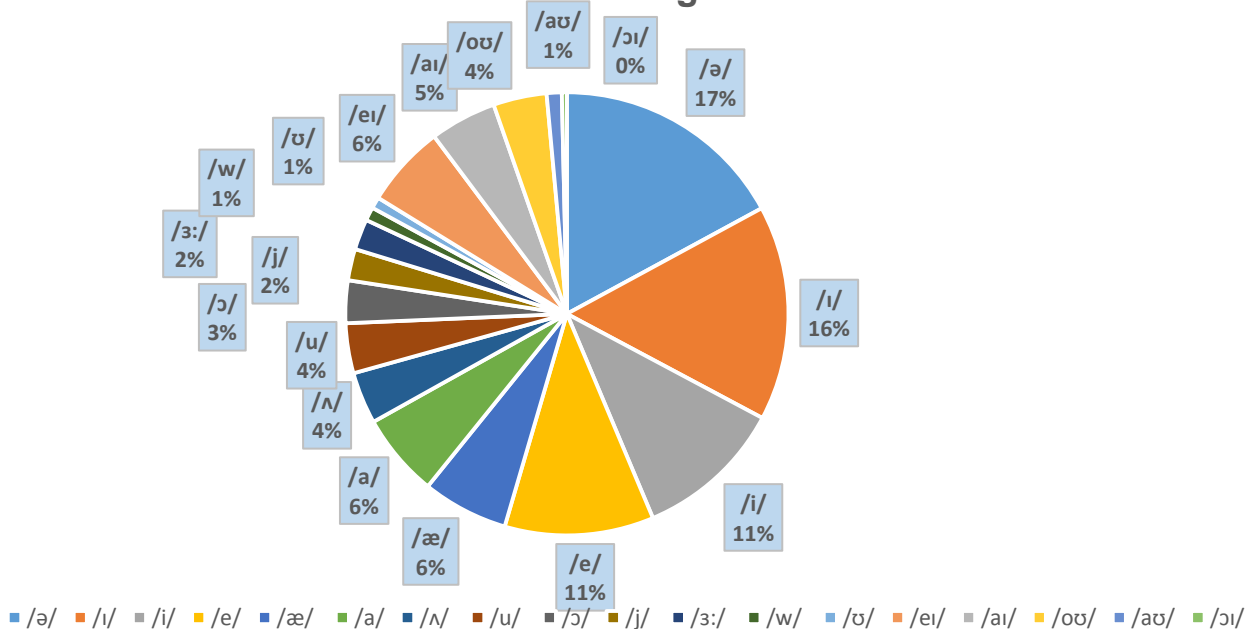
For Hispanics learners of English, in addition to the previous three reduced vowels, there is a fourth, didactically important vowel /æ/, located at the bottom of the English vowel’s quadrilateral (**Fig. 4, Ch 2**). Meanwhile, the other three reduced vowels, previously mentioned, are uppermost located in the in this vowel chart, which is the only feature they share because horizontally they all are distinctively located in deepness as front, central, and back for the “short i” /ɪ/, schwa /ə/ and “short u” /ʊ/, respectively, while /æ/ is midway between central and frontal position.

Since the vowels /e/ and /i/ take the fourth and fifth place in percentage terms, the /æ/ vowel is displaced to a sixth position. However, the former two do not represent a major pronunciation issue for Hispanics since they find similar sounds in Spanish. In contrast, though located in a sixth position, the /æ/ vowel is forth in importance due to its non-existence in Spanish, which makes it of learning priority prominence, after the main three reduced vowels.

Since schwa and “short i” represent 27.3% and 16.7% (**see table F-2 and Graph F-4**) of the vowel universe, accordingly, it means that one out of four and one out of six vowels that speakers encounter must be schwa and “short i”, correspondingly. The 27.3% of schwas take into account schwa elision.

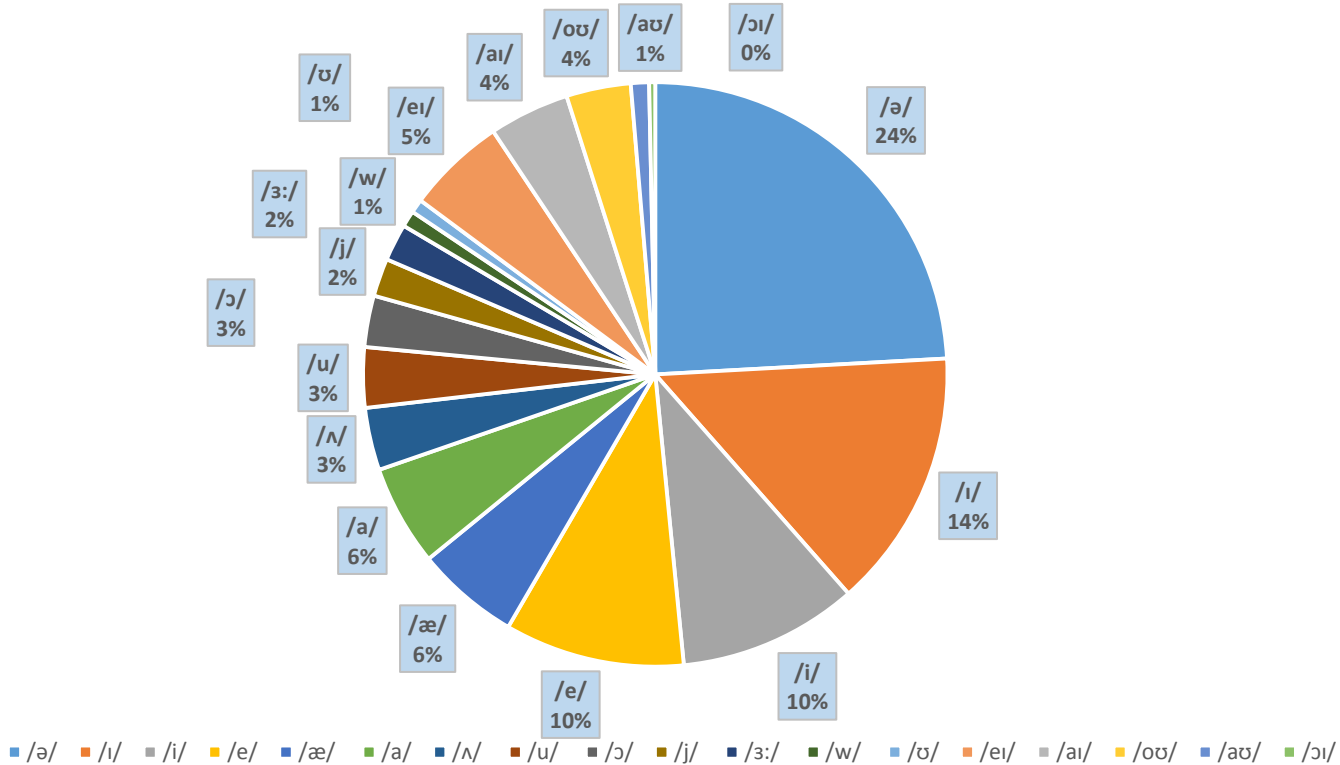
Table F-1 OCCURRENCE OF VOWEL SOUNDS ACCORDING TO THE <u>UNIVERSE OF WORDS</u> BASED ON THE 3000 MOST COMMON ENGLISH WORDS																		Does it include eluded schwas?
/ə/	/ɪ/	/i/	/e/	/æ/	/a/	/ʌ/	/u/	/ɔ/	/j/	/ɜ:/	/w/	/o/	/eɪ/	/aɪ/	/oʊ/	/aʊ/	/ɔɪ/	
29.5%	27.1%	18.8%	18.8%	10.8%	10.5%	6.5%	6.3%	5.4%	4.0%	3.9%	1.7%	1.4%	10.4%	8.4%	6.7%	1.9%	0.6%	No
45.6%	27.1%	18.8%	18.8%	10.8%	10.5%	6.5%	6.3%	5.4%	4.0%	3.9%	1.7%	1.4%	10.4%	8.4%	6.7%	1.9%	0.6%	Yes

Graph F-1 Occurrence of Vowel Sounds According to the Universe of Words, Based on the 3000 Most Common English Words Without Counting Eluded Schwas



Source: Vowel Phonetic Analysis of the 3000 Most Common English Words

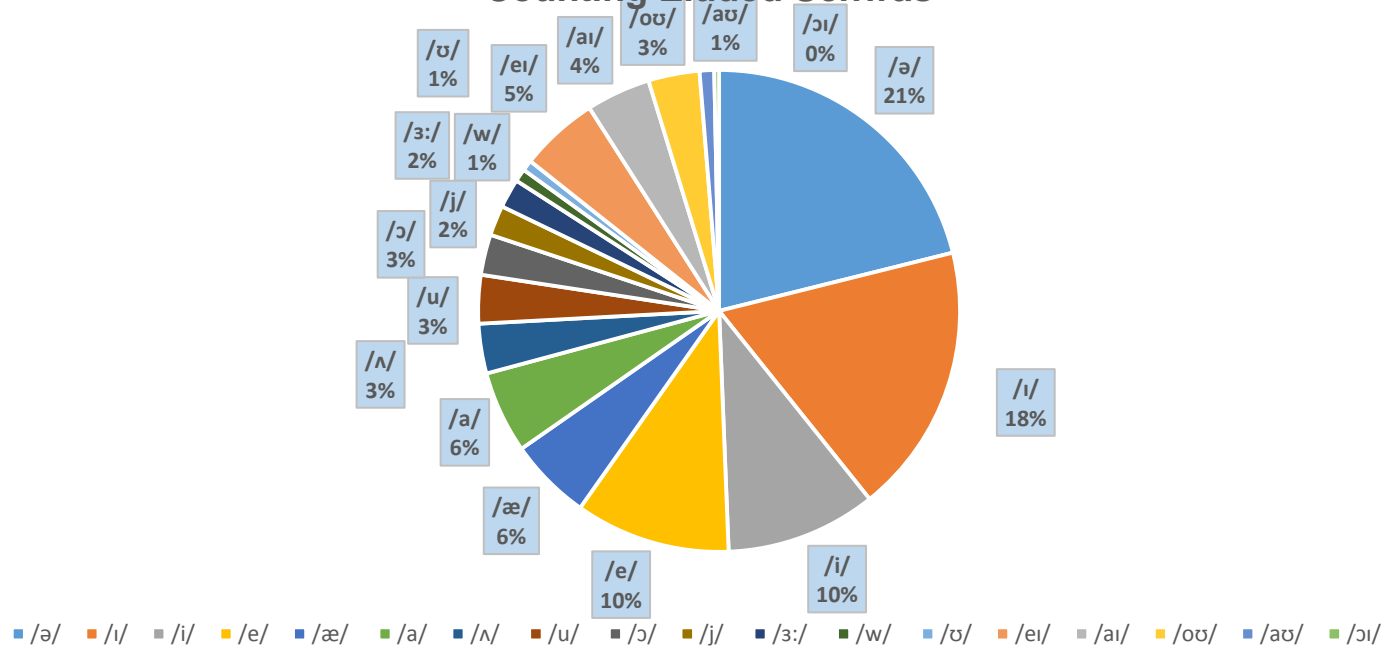
Graph F-2 Occurrence of Vowel Sounds According to the Universe of Words, Based on the 3000 Most Common English Words Including Eluded Schwas



Source: Vowel Phonetic Analysis of the 3000 Most Common English Words

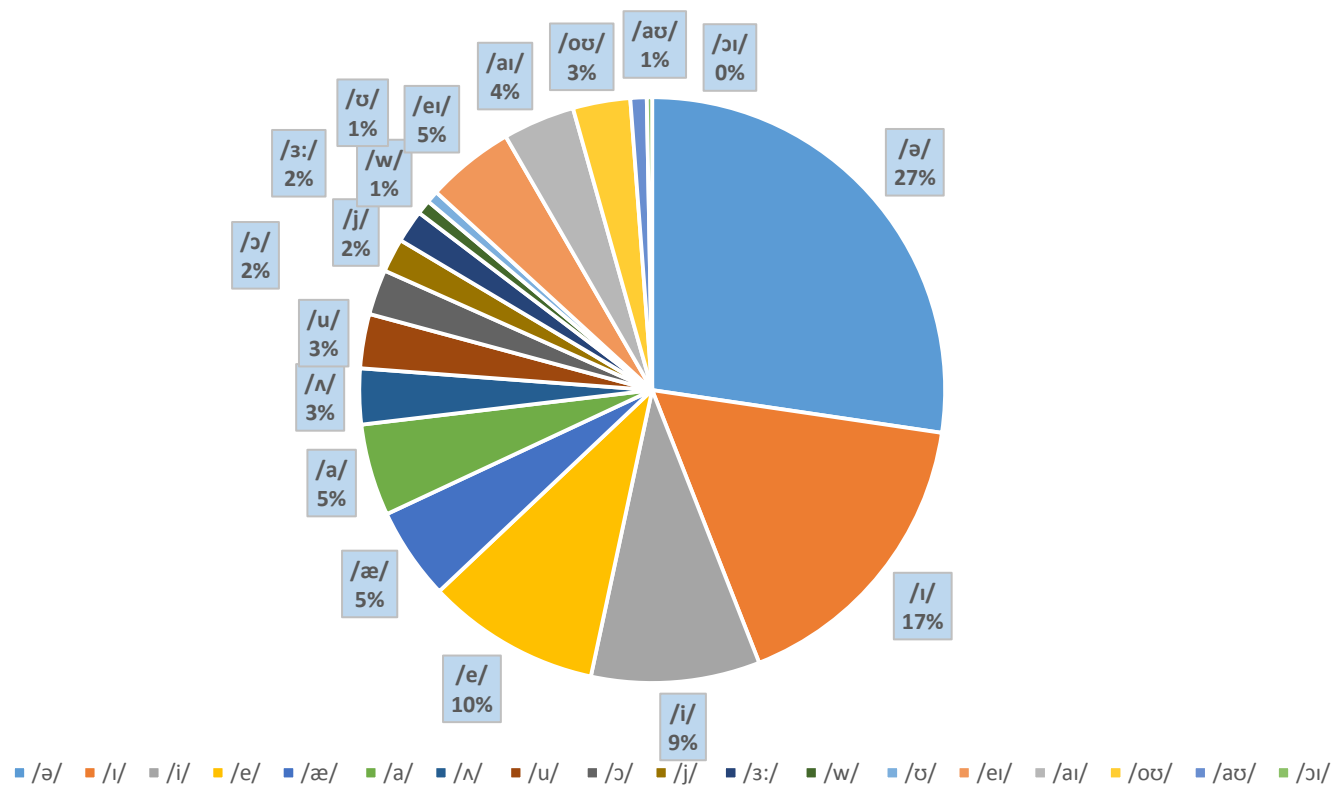
Table F-2 OCCURRENCE OF VOWEL SOUNDS ACCORDING TO THE <u>UNIVERSE OF VOWELS</u> BASED ON THE 3000 MOST COMMON ENGLISH WORDS																		Does it include eluded schwas?
/ə/	/ɪ/	/i/	/e/	/æ/	/a/	/ʌ/	/u/	/ɔ/	/j/	/ɜ:/	/w/	/ʊ/	/eɪ/	/aɪ/	/oʊ/	/aʊ/	/ɔɪ/	
21.1%	18.1%	10.1%	10.4%	5.5%	5.5%	3.3%	3.3%	2.7%	2.0%	2.0%	0.9%	0.7%	5.3%	4.3%	3.4%	1.0%	0.3%	No
27.3%	16.7%	9.3%	9.6%	5.1%	5.1%	3.1%	3.0%	2.5%	1.9%	1.8%	0.8%	0.7%	4.9%	4.0%	3.2%	0.9%	0.3%	Yes

Graph F-3 Occurrence of Vowel Sounds According to the Universe of Vowels, Based on the 3000 Most Common English Words Without Counting Eluded Schwas



Source: Vowel Phonetic Analysis of the 3000 Most Common English Words

Graph F-4 Occurrence of Vowel Sounds According to the Universe of Vowels, Based on the 3000 Most Common English Words Including Eluded Schwas



Source: Vowel Phonetic Analysis of the 3000 Most Common English Words

Appendix B: English Pronunciation Problems of Hispanics

Common Pronunciation Problems for Spanish Learners of English

According to English Speak Like a Native [ESLAN] (nd)

Error Type 1: Adding /ə/ or “epenthetic” vowel”

One of the most common errors for Spanish learners of English is inserting a schwa sound or what is known as the “epenthetic vowel” in phonetics before words beginning with /s/ + another consonant. This results in adding a syllable to the word and consequently in distorting the overall intonation and rhythm of the learners’ speech.

S top; S peak; S now; S naked; S tory; S mile etc.

Error Type 2: Substituting the schwa sound /ə/

Another common error for Spanish learners is substituting the schwa sound (as in the case of most vowels) for another vowel based on spelling. Spanish learners pronounce the English letters as in Spanish. Unlike English, Spanish letters are written as pronounced and so the learners are not confused with the difference between spelling and sound. Since, in spoken English, the schwa sound is the most common vowel in English, mispronouncing it has a severe impact on the learners’ intelligibility. For example in words such as [available], the first two schwa sounds are represented by letter [a], which is normally pronounced as vowel /a/ or /ɑ:/ in Spanish.

R e sponsi b (ə) le; Pers o nality; Veg et ab (ə) les; stati o na ry, etc.

Error Type 3: /æ/

Again, the confusion between sound and spelling causes the Spanish learner to substitute vowel /æ/ for /a/ or /ɑ:/. Even when corrected, the learners could produce /æ/ as /e/ which is an even shorter and more relaxed sound. Although /æ/ is categorized as a short vowel, it sounds slightly longer than /e/ especially before the voiced consonants /b/ and /d/ as the jaw opens wider and the tongue falls lower inside the mouth.

H a ve; C a t; F a t; R a t; plaid; a pple; a dvertising; a ddress, etc.

Error Type 4: /i/ & /ɪ/

Another major error Spanish learners commit is confusing the vowels /i/ and /ɪ/. Usually both vowels are pronounced as a short Spanish letter [i], which somewhat sounds similar to the Australian vowel /ɪ/. The learners' brains are programmed to produce this sound when they see the letter [i] regardless of the language they're learning. Highlighting the difference between the American /i:/ and /ɪ/ is easier for Spanish learners to grasp as it's more distinguishable.

/i/: N ee d; r ead; trea t; believe; mea t; wh eel; rec eipt, etc.

/ɪ/: *Kn it; r id; ti t; live; mi tt; w ill; s it, etc.*

Error Type 5: /ɑ:/

Spanish learners usually like to chop vowels or tend to shorten them considerably. The vowel /ɑ:/ is also either replaced with /ɔ/ or /ʌ/ partially due to the learners' confusion with spelling. In general however, Spanish learners need to be trained on stretching long vowels for a better production of the English rhythm and music.

Rob ot; caught; c a ll; ma ll; f ough t; sto p; wall, etc.

Error Type 6: /u:/ & /ʊ/

As in the case of /i/ and /ɪ/, Spanish learners confuse the vowels /u/ and /ʊ/ and have great difficulty in specifically producing /u:/ as it requires retracting the tongue backwards high inside the mouth. What learners do automatically when they see the letter [u] is produce a tense /ʊ/ (though it is a lax vowel in English), a sound that is somewhat uncommon in Native English.

/u:/: R oo m; t ooth; f ood; moo d; r u de; wooed, etc.

/ʊ/: *B oo k; p u t; foo t; h oo d; c oul d; woul d, etc.*

Error Type 7: /oo/

This vowel is classified as a diphthong. This means that the learners have to *produce two sounds at the same time, a vowel /ɔ/ and a consonant /w/*. Spanish speakers only pronounce the vowel and leave the consonant out. Their lips do not form a tight circle at the end of the sound as they should.

Wr o te; o ld; b oat; c oa t; **mo de**; r oad; show ed, etc.

Error Type 8: /eɪ/ & /aɪ/

Both of these vowels are again diphthongs, which means that Spanish speakers struggle to combine a vowel with a consonant. This gets harder to perform when the vowel occurs between two consonants such as [name] or [wide]. It's extremely difficult for Spanish speakers as it is for most English learners to move the tongue down and then immediately back up to the highest point inside the mouth to produce consonant /j/ followed with a consonant. This leads Spanish speakers to omit the /j/ altogether at times or mispronounce the vowel preceding it whether it happens to be /e/ or /a/.

/eɪ/: N a me; d a te; wait; trai n; gr eat; s a me; wage, etc.

/aɪ/: r igh t; figh t; s ide; l igh t; tried; h ide; n igh t, etc.

Error Type 9: /θ/ & /ð/

Both of these consonants require that the speakers place the tip of the tongue between the teeth and let the air escape through a little gap between the tongue and teeth but Spanish learners ,as with most learners of English, seem to find this quite difficult to manage. What happens then is that they keep their tongue inside and press the tongue tip against their teeth resulting in /t/ instead of /θ/ and /d/ instead of /ð/.

/θ/: thin; wrath; moth; thigh; Ru th; truth etc.

/ð/: weather; loa the; then; wri the; scy the; rather, etc.

Error Type 10: /m/

It needs to be remembered that this is a consonant produced by closing the lips and pushing air through the nose at the same time. Spanish speakers have no problem pronouncing this consonant when it's in the beginning of the word as in [miss] or [mister] but when it occurs in the end of the word, they fail to close their lips. Instead, they only raise their tongue tip up towards the gum producing /n/. The students need to be reminded to close their lips completely when they see /m/ in the end. The real challenge though is when Spanish learners have to pronounce [th] after /m/ as this requires sticking the tip between the teeth immediately after closing the lips for /m/.

Drea m; rhyme; fa me; Willia m; sitco m; some, etc.

Error Type 11: /n/ & /ŋ/

When /n/ is either in the beginning or middle of the word, Spanish speakers place the tongue tip between the teeth instead of bringing it into contact with the alveolar ridge. Although this does not affect the sound much, it delays the production of the succeeding sounds. Consider the word [anything]. When /n/ is the final sound of a word, Spanish speakers tend to confuse it with /ŋ/ and thus fail to raise their tongue tip up to contact the gum ridge and when they are instructed to do that, they have an issue synchronizing the movement of the tongue with releasing the air out. /n/ then does not sound entirely clear when it's at the end of the word. Ironically, when Spanish speakers see [ng] in the end, they sometimes pronounce it as /n/ raising the tip of their tongue to touch the ridge area.

/n/ (beginning and middle): n ame; knight; n orth; listen er; o n ion, etc.

/n/ (end): corn ; thin ; pen ; ca n ; listen ; Husto n ; pardo n, etc.

Error Type 12: /d/ & /t/

In general, for Spanish speakers, all phonemes that involve contact with the alveolar ridge, including /d/ and /t/, are difficult. Some learners will place the tip of the tongue between the teeth and stop the air by pressing their teeth on the tip of the tongue. While this does not cause

a major change in the sound, it affects the production of either the preceding or succeeding sounds.

/d/: d ate; confide ;insi de ; D ominic; d octor; mur der, etc.

/t/: be tter; fertility; until; ma ternity; ma t erial, etc.

Error Type 13: /r/

As with most English learners, Spanish learners encounter enormous problems in producing the English /r/ especially the American /r/ sound. The Spanish /r/ is produced as a result of holding the tip of the tongue very close to the ridge area and moving it so fast that it creates sound vibration. The students need to be instructed to keep the tip of their tongue away from the gum to avoid making such vibration.

R ight; over ; ca rtoon; bird; the re; ser vice, etc.

Error Type 14: /l/

Like in most European languages, the Spanish /l/ is not the same as that in English as the bottom and body of the tongue are quite elevated compared to English. **The English /l/ on the other hand requires that the speaker lower the bottom and body of the tongue inside the mouth as is in the case of /a/ without opening the jaw.** Most Spanish speakers place the tip of the tongue against the ridge as you would instruct them but still fail to produce the correct sound and this is due to their inability to correctly position the backside of their tongue low and deep inside the mouth.

L ike; l ove; call ; fa llen; so ld; deal ; field, etc.

Error Type 15: Voiced Vs. Voiceless

One of the most frequent errors for Spanish learners is voicing and de-voicing consonant. Quite a significant problem for them is /z/ + **vowel** as in [zero] which is pronounced as /si:rou/ but also /s/ + **consonants** as in [sleep], which is sometimes pronounced as /zli:p/. It remains most difficult for them however to voice the final [s] in the word as in [please]. **Voicing and**

de-voicing consonants is an issue that does not only affect /s/, it also affects /f/ and /v/, /k/ and /g/, /t/ and /d/, /tʃ/ and /dʒ/, /ʃ/ and /ʒ/, /p/ and /b/ and finally /θ/ and /ð/. Sometimes the above consonants are also omitted from word endings depending on what comes after them.

/z/: z ero; plea se; i s; ri se; haz ard; ha z el; he' s ill, etc.

/f/ and /v/: fi ve and “fi fe”

/k/ and /g/: log and lock

/t/ and /d/: ki d and ki t

/tʃ/ and /dʒ/ (especially at word endings): bridge and breach

/ʃ/ and /ʒ/: u s ually and “u shully”

/p/ and /b/: Bob and bop

/θ/ and /ð/: with and width

Error Type 16: /h/

Not all Spanish learners make the same error as it depends on the area they come from as well as the level of proficiency. The error occurs when Spanish students move the root of the tongue back towards the velum narrowing the air passage considerably. Such a sound is also known to be a feature of the Arabic language. In English, the voiceless consonant /h/ is made by relaxing the tongue completely and letting the air flow out of the mouth without interference from the tongue. Commonly, Spanish learners mispronounce this consonant at the beginning of the word as in [have].

/h/: h ave; h eight; h ell; h usband; h elicopter; haste, etc.

Error Type 17: /j/ & /dʒ/

Spanish learners find it extremely difficult to begin a word with consonant /j/ as in [yes]. Producing /j/ correctly requires that learners hold their tongue up very high and close to the

hard palate without touching it. Beginning a word in such a position seems to be quite problematic for Spanish speakers whose tongue involuntarily comes into contact with the palate when attempting to do this resulting in a consonant that sounds very similar to /dʒ/ and sometimes /dj/. Strangely, when Spanish learners come across a word that starts with a /dʒ/, they start it with /j/.

/j/: yes; y ell; y et; y ou; U niversity, etc.

/dʒ/: J ohn; g erms; job; g el; j ewelry, etc.

Error Type 18: /w/

The major issue with this consonant only occurs when it precedes vowel /ʊ/ as in [would]. What happens is that Spanish learners involuntarily insert a /g/ before /w/ which makes [would] sound like [good]. The reason this occurs is that when we usually produce /ʊ/, our tongue goes backwards towards the soft palate, but in the case of Spanish learners, it goes further back until it touches it resulting in [g].

/w/: w ould; w ood; w ool; w olf; w omb, etc.

Error Type 19: /v/

Apart from de-voicing or omitting /v/ at word endings, Spanish learners are not able to prevent the upper lip from coming into contact with the lower lip **when producing /v/, the result is /b/**. The greatest challenge for Spanish learners is represented by the word [over] when they are supposed to produce the vowel /oʊ/ prior to /v/ which requires them to move both lips, then freeze the upper lip and move the lower lip independently against the upper teeth.

Appendix C: Factors that Influence the Acquisition of a Second Language

(Lightbown & Spada, 2013; Macaro, 2010)

Some students learn a new language more quickly and easily than others. This simple fact is known by all who have themselves learned a second language or taught those who are using their second language in school. Clearly, some language learners are successful by virtue of their sheer determination, hard work and persistence. However there are other crucial factors influencing success that are largely beyond the control of the learner. These factors can be broadly categorized as internal and external.

Internal factors

Internal factors are those that the individual language learner brings with him or her to the particular learning situation.

- **Age:** Second language acquisition is influenced by the age of the learner. Children, who already have solid literacy skills in their own language, seem to be in the best position to acquire a new language efficiently. Motivated, older learners can be very successful too, but usually struggle to achieve native-speaker-equivalent pronunciation and intonation.
- **Personality:** Introverted or anxious learners usually make slower progress, particularly in the development of oral skills. They are less likely to take advantage of opportunities to speak, or to seek out such opportunities. More outgoing students will not worry about the inevitability of making mistakes. They will take risks, and thus will give themselves much more practice.
- **Motivation (intrinsic):** Intrinsic motivation has been found to correlate strongly with educational achievement. Clearly, students who enjoy language learning and take pride in their progress will do better than those who don't. Extrinsic motivation is also a significant factor. ESL students, for example, who need to learn English in order to take a place at an American university or to communicate with a new English boy/girlfriend are likely to make greater efforts and thus greater progress.

External factors

External factors are those that characterize the particular language learning situation.

- **Culture and status:** There is some evidence that students in situations where their own culture has a lower status than that of the culture in which they are learning the language make slower progress.
- **Motivation (extrinsic):** Students who are given continuing, appropriate encouragement to learn by their teachers and parents will generally fare better than those who aren't. For example, students from families that place little importance on language learning are likely to progress less quickly.
- **Access to native speakers:** The opportunity to interact with native speakers both within and outside of the classroom is a significant advantage. Native speakers are linguistic models and can provide appropriate feedback. Clearly, second-language learners who have no extensive access to native speakers are likely to make slower progress, particularly in the oral/aural aspects of language acquisition.

Appendix D: Observation Guide for Teaching Practice II and Seminar II Students

UNIVERSITY OF EL SALVADOR

WESTERN MULTIDISCIPLINARY CAMPUS

FOREIGN LANGUAGE DEPARTMENT

Observation Guide for Teaching Practice II and Seminar II Students at UES

OBJECTIVE: To gather data on most common mispronounced vowel sounds by students

Observer: _____ Date: _____

Mistake Type	Vowel Phonemes	Example (words)	Teaching Practice II <input type="checkbox"/>
			Seminar II G-01 <input type="checkbox"/> G-02 <input type="checkbox"/>
Mispronounced Vowel Phoneme(s)	/ə/		
	/ɪ/		
	/ʊ/		
	/æ/		
	/ɔ/		
	/ʌ/		
	/ɑ/		
	/ou/		
Epenthetic Vowel	(adding a vowel before initial s)		

Appendix E: Questionnaire Survey

**UNIVERSITY OF EL SALVADOR
WESTERN MULTIDISCIPLINARY CAMPUS
FOREIGN LANGUAGE DEPARTMENT**

Questionnaire-Survey on Environmental and Personal Factors Related to English Pronunciation Accuracy Addressed to Fourth and Fifth-Year Students at UES (11/07/17)

OBJECTIVE: To gather data on personal-environmental factors and English pronunciation

INSTRUCTIONS: Check the square/circle of your best selection, fill in the blanks with the information required, and underline the bold text/letter of your choice.

Age: ___ years	Gender: M_ F_	Nuclear family members: ___	Number of siblings: ___
Birth order (you are child N°): ___	Relatives in the US/Canada /Australia*? Yes _ No __. Who? _____	Employed?	Subjects registered this semester:
		Yes _ No _ Hours/week: _____	
GPA (CUM):	Have studied other major before?	Travel time to UES:	Year of admission at UES
N° Social hours: Per week: ___ Total gained ___	Yes _ No _ Totally/Partially		Have you Played a musical instrument? Yes ___ No __ How long? _____ Instrument: _____
Department of residence:	City, town, or village name:	High School type: Private __ Bilingual __ Public __ Foreign (English) __ Foreign (Spanish) __	
	Urban: __ Rural: __ Peripherally urban __	Type of public High School: Regular __ Presential __ Semi-presential (weekend) __ Virtual __	

*Or any other English-speaking country, either as L1 or L2 (UK, South Africa, India, etc.)

1) If you have lived outside the urban Santa Ana city, which has been your case?

- You have traveled every day or so to get to UES
- You have stayed in Santa Ana by: Pupilage _ Rent _ Staying with relative(s) _

2) In addition to studying, in which of these activities do you spend part of your time, either as spectator (**E**) or performer (**P**)? Total time: ___ **hours a week**.

- Sport (**E/P**) Art (**E/P**) Religion (**E/P**) Other (**E/P**) _____

- 3) Do you also spend time in any of the activities indicated below? ____ **hours a week.**
 Household chores Care (child or elder) Boy/girlfriend Red/Green Cross
- 4) If you are not still involved in any of the previous activities (Q2 and Q3), which one(s) would you like to enroll in when you graduate? If any _____
- 5) Have you ever studied English outside the formal system (English Major at UES), either before enrolling at UES or simultaneously to your studies at the university?
 Yes
 No

If yes continue with question 6). If “no”, skip and go to question 9

- 6) If yes, which has been the total number of years or months that you have studied outside the formal system, either continuously or discontinuously? _____
- 7) If your studies of English in or outside the formal system has been discontinuous, how many times have you returned to your English studies? _____
- 8) Where and by which means have you studied outside the formal system?
 Local Courses
 Online Courses
 Other Place(s) _____
- 9) Describe any other type of English exposure (Formal or informal education): _____
 _____ . Where? _____ . How long? _____
- 10) Do you want to become or remain a teacher when you finish your English major?
 Yes
 No

If “yes”, in which level of the formal system (first 4 items) or informal system?

- Kindergarten
 School (up to 9th)
 High School
 University
 Courses in academy or university
 Online teacher
 Other

Why? _____

11) If you were a university teacher (professor), which subject(s) would you like to teach?

12) What kind of workplace environment do you prefer to be a teacher?

- Bilingual private school
- Public school
- University Courses (Ext. Program)
- Courses in private Academies
- Online teacher
- Other(s) _____

Why? _____

13) Underline the kind of working environment and sub-environment(s) you consider ideal for you to develop as a professional. Up to 2 sub-environments are possible.

Working Environment	Academic (Formal Education)	Academic (no formal Education)	Office Employment	Field (outdoors)
	Kindergarten, School (up to 9 th), High School, University	Academy or University courses	US embassy, Min. of Foreign Affairs, Call Center, Telework, Translation	Fly attendant, Cruise Ship employee, Interpreter at any field (NGO , Health, Religion), Tourist guide
Other environment and sub-environment:				

14) Mention the working environment and sub-environment in which you are actually immersed currently: _____ Are

these two previous environments the same (Qs. 10 and 11)? Yes ___ No__

If not, which strategic change or updating do you consider necessary to get your dream job?

15) Check two of the four macro skills in which you have typically spent most time? Could you guess what percentage of your time devoted to study?

- Listening (___ %)

- Speaking (___ %)
- Reading (___ %)
- Writing (___ %)

Note that the total time of the four macro skills must be 100%.

16) Regarding your spoken English and assuming that Grammar is not a problem anymore, which aspect do you consider the most important?

- Fluency
- Phoneme accuracy

17) What reason(s) motivated you to study English as a major? (up to 2 options are possible)

- To teach English at the level I want
- To get any English-related job, other than teaching, to earn a **decent/high** salary
- To understand/study** artistic expressions [songs, movies, literature, etc.]
- To work in a native-speaking or native-speaking related environment [US embassy or other diplomatic place, Call Center, International transportation system (planes, cruise ships)]
- Other reason(s): _____

18) Let's suppose you are a candidate to migrate legally to an English-speaking nation to live there permanently. Which would you prefer your case rather be?

- Meet family or relatives holding hopes to get a job (the job is not for sure beforehand)
- A clear opportunity for a job through a work visa, expecting to get a family later
- Get married with an English native speaker
- Business opportunities abroad
- You wouldn't be interested in migrating

19) Let's suppose you are a candidate to migrate to an English-speaking country to live there temporarily to study on a scholarship. Which would you prefer your case be?

- To go study to get a job promotion
- To go study a specialty you like a lot (though a salary raise is not guaranteed)
- You wouldn't be interested in taking the opportunity

20) Any English student could acquire a native-like English pronunciation, if he/she wants.

- Highly disagree
- Disagree
- Don't know
- Agree
- Strongly agree

21) English phoneme pronunciation accuracy is important for native-like pronunciation.

- Hardly ever
- Occasionally
- Sometimes
- Frequently
- Very frequently

22) How often have you agreed with your teacher when corrected for mispronunciation?

- Hardly ever
- Occasionally
- Sometimes
- frequently
- Very frequently

23) English phoneme pronunciation accuracy is a better indicator of native-like pronunciation than it is fluency.

- Highly disagree
- Disagree
- Do not know
- Agree
- Strongly agree

Why? _____

24) Do you want to develop a native-like English pronunciation?

- Yes
- No

25) To what level you would like to develop English pronunciation accuracy?

- Poor
- Elementary
- Regular
- Fairly Good
- Very Good

26) How often have you notice phoneme pronunciation problems in your classmates, this semester?

- Hardly ever
- Occasionally
- Sometimes
- frequently
- Very frequently

Ex: _____

27) Do you pay attention to your phoneme pronunciation error?

- Yes __
- No__

In which moment? **BEFORE, DURING, OR AFTER** the error? _____

28) In a scale from 1 to 5, how much did you use to participate voluntarily in class activities during your 2nd and 3rd year? _____. In which subject(s)? _____

29) Using the same scale, how much do you participate in class nowadays? _____. In which subject(s)? _____

30) Regarding size of workgroup, while participating in oral activities you have preferred:

- Large groups (4 or more Ss)
- Small group/pair (2 or 3 Ss)
- Individually

31) Regarding spoken English in reading activities, whenever you have found a new word, which pronunciation you have seriously doubted about, you have...

- Taken chances and pronounce it
- Waited for teacher's or peer's help

32) Whenever classmates have chosen a representative of the workgroup to speak in front of the class you have preferred or wished:

- Yourself be the representative
- Someone else be the representative

- 33) Whenever you had a serious doubt on spoken English (2nd and 3rd year) you used to:
- Find out with most skillful peers Ask the teacher Other _____
- 34) What would you prefer to practice spoken English with friends or classmates?
- Reading aloud in turns with them Enrolling in conversations with them
- 35) Mention any icon(s) or element(s) of the US culture, which you like or feel impacted by? Either related to sport, art (7 branches), politics, science or any other? _____
- 36) Say some names of English-spoken movies or songs and its authors (or actors), which have positively impacted you. If not, you could write any lyrics fragment instead: _____
- 37) How do you define yourself (introvert or extrovert)? _____
- 38) Underline the type(s) of intelligences most dominant in you: **Bodily-kinesthetic/Visual-spatial/logicalmathematical/Linguistic/Musical/Naturalistic/Interpersonal/Intrapersonal/Existential**. Surely you recall it from the multiple intelligence tests passed in Didactics III.

37) Questions for Information on your residence area and the public services	Yes	No
1) Cable Internet service in your residence area?		
2) Is the public transportation system regular? (each 10, 15, or 20 minutes)		
3) Do you use cyber coffees located near the university?		
4) Is there any Internet service (cyber) near home? (3 blocks away or less)		
5) Do you use a smartphone/tablet to get Internet access at home?		
6) How much do you use this near-home cyber as an average? ____ hours a week		
7) How much do you use the near-university cybers as an average? ____ hours/week		

PART II. EXPOSURE TO ENGLISH LANGUAGE OUTSIDE THE CLASSROOM

- 1) Have you ever verbally interacted with any native speakers? Yes No
- How long? _____ How recently? _____ Where? _____

2) How many hours a week did you use to practice spoken English outside the classroom during your first three years of the major? _____ hours per week.

Where and with whom? _____

3) Have you ever experienced general **native** exposure to English? Where, when, and how much? Place: _____. Time span: _____. Hours/week: _____

Which type(s) of exposure? **Interactive** (both reception and production)

Non-interactive (only **reception** or only **product**.)

4) How much have you been exposed to **interactive** English in the last 2 years?

Very Little

A Little

Regular

Much

Very Much

5) As an estimated average, how many hours a week have you been exposed to **non-native** interactive spoken English outside the classroom, over the last two years?

Exposure: _____ hours a week. (If you teach you can include those hours too).

6) Which of the following ICT tools (Information and Communication Technology) have you had access to for English purposes at home? If you choose more than one option, number them, assigning number 1 to the one you have access to the most. **Write how many hours a week (in the blanks).**

Desktop computer _____

Smart TV _____

Smartphone _____

DVD _____

Laptop computer _____

Cable TV _____

Tablet _____

Other _____

7) Which of the previous one(s) do you use dominantly for Internet access **at UES**?

_____ How many hours a week? _____

8) How frequently do you listen to English music?

- Hardly ever
- Occasionally
- Sometimes
- Frequently
- Very frequently

9) In addition to listening, how often do you sing **along/afterwards** the English songs?

- Hardly ever
- Occasionally
- Sometimes
- Frequently
- Very frequently

Mention some radio stations (local or international): _____

List music sites or music software packages: _____

Write 3 or more songs and its respective singers: _____

10) Which of the following spoken mass media in English have you mostly been exposed to **non-interactively**, despite frequency? Mention names of movies, songs, videos, programs, etc., as well as the estimated number of hours a week you spend on each. For series or movies mention the names of 2 actors (including protagonist).

Spoken Mass media	Type of spoken exposure	Program, series, movie, or song name(s) and actor(s)/author(s)	Hours a week
Cinema	Movies		

Local Radio stations	Songs, Talk radio, News, tales, humor, other(s) _____		
TV cable	News, documentaries, sports, series (comedy, supernatural), movies, reality shows, other(s) _____		
INTERNET	Social networks, e-dictionaries, on-line courses, video conferencing, foreign radio stations, TV channels, videos, movies, others _____		

11) Have you taught English in the last two years? Hours a week: _____

12) Have you been exposed to native spoken English any of the following categories?

- Courses _____ Other (s): _____
 Relatives abroad _____
 neighbor _____
 Being abroad _____
 Social networks _____
 Videos _____
 workmate _____
 Call Centers _____
 DVD videos or movies _____

PART III. PRACTICE OF SPOKEN ENGLISH OUTSIDE THE CLASSROOM

1) As an estimated average, how many hours a week have you practiced spoken English outside the classroom in the last two years? _____ Hours a week.

2) Which type of phonemes were the most difficult for you to produce in 2nd and 3rd year?

- Vowel phonemes Consonant phonemes Both equally

3) Which type of phonemes are the most difficult for you to produce in fluid speech nowadays?

Vowel phonemes Consonant phonemes Both equally

4) Which of the following types of **interactive** practice have you been subjected to outside the classroom? If you choose more than one option, number them and assign number 1 to the one you have access to the most.

Type of interactive spoken practice	Examples or names	Practice hours a week
With classmates , friends, or students (bus, cafeteria)		
With relatives abroad (by phone, video conferencing)		
With foreigners (video conferencing)		
Online courses [on-screen interacting Teacher(s)]		
Social networks		
Other (teaching, etc.)		
Total practice (hours a week)		

5) Which of the following types of **non-interactive** practice have you been subjected to? If you choose more than one option, number them and assign number 1 to the one you have access to the most.

Type of non-interactive spoken practice	Names of songs, phonemes, videos, sites, and/or places where practice occurs	Practice hours a week
Songs		
Practicing difficult phonemes alone		

On-line courses (non-interacting teacher)		
Social networks		
Other		
Total practice (hours a week)		

6) During semesters IV through VII of the major, how often did you use the dictionary to check or self-correct your pronunciation before presentations or any oral activities?

- Hardly ever
- Occasionally
- Sometimes
- Frequently
- Very frequently

Name and/or type of dictionary (ies) _____

7) For dictionary use, what types of words did you use to look up? If you also looked up well-known or common words, **did you ever find any surprise?**

- Only unknown pronunciation words
- Known and unknown pronunciation words

Describe any surprise: _____

8) As an average, how many words per presentation did you use to check for pronunciation before your oral presentations for the subject matters of **question 6**? How many of these were unknown-pronunciation words?

Total number of words: ____ each presentation. Number of unknown words: ____

9) Roughly, how many words per class did your teacher use to observe for your pronunciation improvement, either in your “Didactics” presentations or in in your “Readings and Conversations I and II” presentations? _____

10) Regarding those subjects, did you use to rehearse (pre-practice) your oral presentations? If so, how many rehearsals per presentations? Rehearsals ____

- Yes
- No

- Alone
- With audience

11) Do you think your teachers used to correct every single pronunciation mistake or just the most noticeable ones? Why? _____

12) Do you still use dictionary to improve your oral pronunciation before oral presentations or practicum classes in “Seminar II” and/or “Teaching Practice II”, respectively?

- Yes
- No
- How _____

13) In your last project presentation (Seminar II) or last practicum teaching class (Teaching Practice II), how many words did you look up for phoneme pronunciation accuracy? Write some words and their phonetic symbols, if possible. **N° of words:** ____

Word	examples:

14) As an average, how many words per class did your cooperating teacher observe in the practicum classes (Teaching Practice I, II) for your pronunciation improvement? _____

15) As an average, how many words per class did your teacher correct after your class presentations (Teaching Practice I, II) for your pronunciation improvement? _____

16) In which of these two sets of subjects were you corrected the most for pronunciation by teachers? (Teaching practice I and II or Readings and conversations I and II)?

Explain	why?

17) Regarding the previous subject matters of **question 16**, do you think your teachers corrected every single pronunciation mistake or just the most noticeable ones?

Why?

18) Do you think you were corrected enough for pronunciation in Readings and Conversation I and II? Yes No Why? _____

PART IV. PRONUNCIATION DATA

- 1) Do you know or use so far any pronunciation improvement strategy at all, which you may share? _____
- 2) Mention 3 subjects or more in descendent order, in which you were corrected the most for word pronunciation errors along the major _____
- 3) Do you use pronunciation self-correction in your presentations? Yes No
- 4) Underline the areas of pronunciation in which you still have some kind of trouble. Assign a **NUMBER 1** to the most troublesome area, a number 2 to the second most troublesome one, to a maximum of three problems or three numbers, respectively.

- Vowel phoneme
- Consonant phoneme
- Consonant clusters
- Epenthetic vowel *
- Voice projection
- word stress

* Epenthetic = additional [unnecessary vowel pronounced before initial “s” (stay, stop)]

5) For columns 1) and 2), underline the words with which **your classmates** have any trouble in fluid speech. Examples of difficult words are given but you can fill in the blanks with additional troublesome words to you. For column 3) just underline the letters as indicated.

Broad Category	LENGTHENING, SHORTENING, OR SUBSTITUTION OF SOUNDS		
Pronunciation error type	1) Epenthetic vowel (adding a vowel before an initial “s”)	2) Sound omission (Omitting final sounds in consonant clusters)	3) Vowel sound substitute (turning schwa sound into a Spanish vowel sound)
Examples	<u>S</u> peak _____	Ask <u>s</u> Cold <u>d</u>	Student About

	<u>S</u> tory _____ <u>S</u> mall _____ <u>S</u> tay _____	Desks _____ Donal <u>d</u> 's _____ Words _____ World _____	Responsible Today Personality Tomorrow Vegetables Compound Stationary Product
Additional Instructions	Underline the difficult word(s) or add others similarly difficult	Underline the difficult word(s) or add others similarly difficult	Underline the letter(s) that corresponds to a schwa /ə/, if there are any

- 6) In your opinion, which is the most difficult vowel phoneme? _____. Which is the second most difficult one? _____.
- 7) In your opinion, which is the most frequent vowel phoneme? _____. Which is the second most frequent one? _____.
- 8) Which of the following methods or tools have you used to practice or improve your phoneme pronunciation?
- Exhaustive repetition alone (≥ 25 times)
 - Practicing in front of the mirror
 - Audio recording
 - Video recording
 - Practicing in front of others
 - Pronunciation software _____
 - None of the previous ones
 - Other(s): _____

How often?

- Hardly ever
- Occasionally
- Sometimes
- Frequently
- Very frequently

9) In your opinion, what type of changes should be implemented for the teaching-learning of English pronunciation be improved?

- Minor
- Fairly lower
- Intermediate
- Fairly higher
- Major

Suggestion(s)?

10) Regarding the subject English Pronunciation (3rd term), is it okay the way it is distributed now (**punctually** in a single course) or it should be better if **distributed** in more courses, along the major? _____. How many courses? **2 or 3** _____. How many hours a week? **4, 6, or 8**? _____. **Isolated** as nowadays or **applied** in combination as part of other courses, like intensive courses or conversational courses (for instance)?

11) From column 1) to 5), write the correct vowel phoneme symbol next to the word that contains it and underline the corresponding letter(s) of the word. For column 6), just underline the letter(s) that correspond to the schwa, if any.

Phoneme		VOWEL PHONEME k1									
		1) /æ/ & /a/: <u>cat</u> , <u>car</u>		2) /i/ & /ɪ/: <u>see</u> & <u>thin</u>		3) /u/ & /ʊ/: <u>you</u> & <u>put</u>		4) /oo/ & /ɔ/: <u>old</u> & <u>taught</u>		5) /ʌ/, & /ɔ/: <u>cut</u> , <u>raw</u>	
Word Exercises	Had	Article	If	Give	Rule	Would	Alone	Thought	Govern	Around	Support
	Sad	Calm	Kill	City	Fool	Should	Board	Cold	Brought	Extra	Survive
	After	Army	Guilt	Active	Tool	Book	Also	Caught	Color	Select	Success
	Father	Barber	Sick	Acting	Pool	Took	Fault	Fold	Awful	Teacher	Campus
	Adapt	Card	System	Foolish	Boom	Pull	Coat	More	Money	Cousin	Fashion
	Absent	Adopt	Visit	Quiz	Rude	Push	Author	On	Cover	Pencil	Ambiguous
	Mother	Comb	Busy	Did	Woman	Full	Load	Join	Toxic	Ability	Anxiety
Important: Example words are given above for each phoneme symbol (first row), just in case phoneme symbols are not fresh.											
Phoneme		VOWEL PHONEME k2									
		1) /æ/ & /a/: <u>cat</u> , <u>car</u>		2) /i/ & /ɪ/: <u>see</u> & <u>thin</u>		3) /u/ & /ʊ/: <u>you</u> & <u>put</u>		4) /oo/ & /ɔ/: <u>old</u> & <u>taught</u>		5) /ʌ/, & /ɔ/: <u>cut</u> , <u>raw</u>	
Word Exercises	Have	Artificial	Is	Forgive	School	Could	Boat	Bought	Monkey	Again	Supply
	Pad	Palm	Bill	Pretty	Zoom	Good	Abroad	Told	Thought	Sofa	Suppose
	Abstract	Arch	Build	Classic	Food	Book	Sofa	Audition	Company	Secret	Surprise
	Father	Bargain	Sick	Saying	Cool	Took	Cause	Soap	Saw	Catcher	Focus
	Subtract	Bar	Symbol	Finish	Fool	Bull	Also	Coin	Color	Factor	Success
	Absolute	Almond	Listen	Quick	Soon	Bush	August	On	young	Official	Product
	Brother	Comb	Business	Will	Wolf	Full	Phone	Before	Toxic	Ability	Anxiety
Important: Example words are given above for each phoneme symbol (first row), just in case phoneme symbols are not fresh.											

Appendix F: Interview Guides and Transcriptions

UNIVERSITY OF EL SALVADOR
WESTERN MULTIDISCIPLINARY CAMPUS
FOREIGN LANGUAGE DEPARTMENT

Interview 1

Questionnaire Guide for Interviewing Experienced Teachers on Didactics and Intensive English Courses

Interviewer: Alejandro E. Peña G. and Ernesto D. Meléndez L. Date: 01/19/2018

1. How long did you teach the subject Didactics I, II, and III for students majoring English Language? How many years and how many groups at once?

11 years teaching didactics and 5 years I had 2 groups in the same semester.

2. We understand that, in the previous subject, the communicative approach is presented as one of the main approaches under which students of the major teach and learn, isn't it?

I wouldn't say we used the communicative approach. We used a mix of all the methods.

3. In addition to the subjects already mentioned in question 1, you have simultaneously taught Intensive Advanced English subjects. It is reasonable to think that you have applied the communicative approach in those subjects, isn't it?

There was a semester in which I was teaching basic, intermediate, advanced, and didactics at the same time. I always applied the communicative approach in English levels (referring to the 5 intensive subject matters, from Basic to Advanced II).

4. According to many authors, the communicative approach focusses more on conveying a fluid and understandable message, thus favoring fluency more than pronunciation

accuracy. So, in addition to the insufficient exposure to interactive native English, don't you think the communicative approach might be hindering a native-like pronunciation in fourth and fifth-year students of the major? If so, to what extent? Minor, mayor, intermediate?

I don't think the communicative approach hinders that. We cannot deny that classes are mostly based on the communicative approach. We use a combination of many methods. I don't think that is the hindrance that students have. One of the problems is that students focus on passing not learning. The problem is that they may pass an English course but do they really have the competences to be consider a proficient English speaker? I don't think so. Probably they passed, but they get through advanced they passed it then they continue taking linguistics, morphology, etc. but they don't work on their English skills, they think since they can get by, they can communicate, they can understand a native speaker, they think it's enough and they don't continue expanding the language skills. Just yesterday I read an article and it says that you may consider a proficient L2 speaker when at least seven years have passed by after learning the language, after seven years you have been exposed to the language. One of the factors that they need is the real world experience. How much they are exposed to. Thesis works are out of date, students should be in call centers, (or) teaching, I don't say research it's not important but students need something more practical. In a group there are two or three students that are outstanding. In didactics (it) is different sometimes there are seven students that are very good at teaching but not necessarily good at speaking the language or the opposite.

5. We understand that you have just finished teaching English Grammar II this semester. We have noticed that whenever you get an opportunity you correct students for pronunciation accuracy. Approximately, what percentage (divide the class in four parts) of students do you correct and which correction method do you applied (during versus after speaking and individual versus collective correction)?

*This will be my fourth year teaching grammar. There is one thing there, **my main focus on grammar is not pronunciation it's on the periphery. I do on the spot correction.***

6. In relation to the same subject, which is the dominant type of pronunciation correction that you apply? Segmental (phoneme) or suprasegmental (intonation, stress, etc.)? *In case you apply the latter, how often do you do it? What about the subjects you used to teach in the didactical or intensive-English area?*

It is suprasegmental, I don't go for segmentals.

7. Continuing with the Grammar or any other subjects, did you realize about any pronunciation improvement by the end of the term, specifically regarding phoneme accuracy, in students, as compared with the beginning of the course?

(No), since pronunciation is not my target I know it is an addition that I do to my courses. I even include vocabulary. I do not want to teach grammar in isolation. For example I bring videos because they need to see the things in context. Everything needs to be connected. It is not about how much vocabulary you know but how you use it.

8. In relation to the same subject, we also know that you have innovated with a mixture of authentic materials and national-reality landed materials, which means original native videos of weather phenomena, for instance, which later on are extrapolated to the national reality, during or after class. What difference can you mention in terms of students achievement, more than cognitively, emotionally? Specifically in regard to motivation, confidence, or self-esteem?

*I have taught didactics for many years, I think it helped me. I consider that **my students are not afraid of me probably before getting in to the class probably when they don't know me they are but once in the class they know that I enjoy what I do. I feel passion about teaching. I enjoy learning a new word. I think that make students not be afraid of asking me. I know everybody values correction. I understand because I know that learning a language is not the most difficult thing to do but I know that grammar is complex. They consider grammar a monster. I tell them **grammar is a tool not a weapon.** There are many people who have lived in the states that are very good at speaking the language who do not succeed in grammar.***

9. Didactically, Laroy (2012) proposes a pronunciation teaching approach that is **oblique (indirect), pragmatic, and holistic (physical-emotional)**. He states that pronunciation is intimately connected with our feelings about ourselves, like confidence, self-esteem, and sense of identity. That's why a holistic approach to pronunciation teaching is implemented not only by involving all the learner's senses but also by enhancing their confidence and working with their personalities. What's your opinion about these concepts, particularly in terms of applicability or implementation feasibility in our institution?

*I think that is **very idealistic**. I love the part where he says it needs to be holistic, but it is complex I would say. **I think that is mostly applicable in a second language environment(s)** but here we do not have a second language environment. This is a foreign language environment. That is the ideal thing to do. Students say that they learn more theory of pronunciation than practice it.*

10. Based on all those years of teaching experience, which vowel phoneme(s) do you consider the most difficult for students to reproduce since the beginning and until the end of the subject(s) you teach?

Long and short I

11. Regarding the intensive English courses you taught in recent years, do you consider the size of your class groups were appropriate for students' optimal learning or practice of English pronunciation? Are they the correct size for students' participation?

No, once, I taught 50 students in advanced. Now they have 35 to 40 students. There is a limit stablish but that time they didn't have space for other group.

12. How many students do you consider appropriate for an intensive English group to develop a better teaching-learning **pronunciation** process? How many did you attended as an average?

*Here in the university, we manage 35 even though **the ideal number is 20**, I think. **If I have 30 that's perfect if I have 25 even better**. Average of students per class: **Grammar 50, didactics I would say 40 to 35, advanced 35***

13. Do you use the laboratory equipment or any other technological resources to teach your current classes or did you use them in the past? In which subject(s)? *I do I used videos, online tests, etc.*

14. Any suggestions to improve the language lab, either regarding hardware or software?

We have a lot of free software but it is up to the teacher. [NO CONCLUSIVE SUGGESTION]

15. Do you consider that it is a good idea to take English Pronunciation in the second year of the major? Is it taught at the right moment along the major? Why?

I don't think (so) because before it used to be in the third year. I had the opportunity to take it during my fifth semester and I think I was more aware. It was tough, but I had more skills. We have not the affordance of making that decision. Grammar I don't think it's at the right moment, as well.

16. Do you think that having just one English Pronunciation course is enough for the students of the major?

I think morphology and phonology are a follow up. You don't need more courses focus on pronunciation what you need is to practice and see how they work in context. [APPLIED PHONETICS]

17. In curricular terms, how do you evaluate or assess the distribution of English Pronunciation instruction throughout the major? We would appreciate it if you address two or three dichotomies, like punctual versus distributed pronunciation instruction, isolated versus applied or integrated pronunciation teaching-learning, intensive versus non-intensive pronunciation courses.

I remember last time we used a book and there was a part for phonemes in a very basic way. It was like integrating pronunciation, grammar, and writing. [HE IS AN ADVOCATE OF INTEGRATIVE APPROACHES TO PRONUNCIATION]

18. Kelly (2012) claims that teachers must go beyond reactive pronunciation teaching by moving to planned pronunciation teaching, where sample lessons are of three types: INTEGRATED (part of every subject), REMEDIAL (corrective), AND PRACTICAL (focused on weak areas). What opinion does it deserve from you?

Here the approaches are totally different. Practical would be the ideal thing to happen.

19. Which types of strategies may you recommend for students to achieve English vowel phoneme pronunciation accuracy and for teachers to instruct students about it?

I would go for a more practical approach, more exposure. Since we do not have the luxury of having a native speaker in each class, I will go for exposure. I love videos, I love movies, and I will go for that.

20. From your academic vast experience, which is the most common or most frequent vowel sound in spoken English?

I cannot give you an answer, I do not know.

21. From your academic vast experience, which is the second most common or second most frequent vowel sound in spoken English?

I will say that teacher is one of the main resources but not the only one because now we have technology.

UNIVERSITY OF EL SALVADOR
WESTERN MULTIDISCIPLINARY CAMPUS
FOREIGN LANGUAGE DEPARTMENT

Interview 2

Questionnaire Guide for Interviewing Experienced Teachers on Pronunciation and
Intensive English Courses

Interviewer: Alejandro E. Peña G. and Daylix E. Orantes Z. Date: 10/23/2017

1. How long have you been teaching the pronunciation subject for students majoring English language?

I began teaching pronunciation since 2005. During 2 years, I remember I taught 3 groups. So that means 17, 20, 25 times in my whole professional life here in the University. [13 years teaching in the pronunciation area]

2. Which vowel phoneme(s) do you consider is (are) the most difficult to learn at the beginning and at the end of the English Pronunciation course for students?

*Definitely, **the schwa is a very difficult vowel sound** because it appears wherever in the language and it is represented by all the vowel sounds, so, for students that is so difficult and it is because it is not a defined sound. It is like the characteristic of the language because **schwa occurs in almost every word.***

3. Regarding class group size, how do you assess the size of the group here to teach English Pronunciation? Do you consider them appropriate?

*No. I assist like 40 or 45 students per group and you know that seeing the pronunciation, to see how they develop themselves during the whole period is so difficult. If I had the chance, I would divide into 2. **20, 22** is ok, that is like an accurate number, right, 20, 22*

4. Do you use the laboratory equipment to teach your classes? In which subjects?

*I use the lab in all. I use the computers because I have **a virtual classroom for each class**, so I upload there audios speeches/ many things that are useful for students.*

5. Any suggestion for you to improve language lab either regarding hardware or software?

*The first suggestion is that we require every semester. We want the computers updated, we want them clean, and they are not even clean. So if we talk about software, **the university can invest in good, I think, right?***

6. Do you consider that it is a good idea to take English Pronunciation in the second year of the major? Is it taught at the right moment along the major? Why?

*No it is not a good idea to take pronunciation in the second year and it is because of the maturity students have. They are coming for the first year and when they come to the second year, **they face for the first time three subjects in English at the same time....** And they are difficult because pronunciation involves theory so that **they are not ready to deal with a lot of vocabulary they don't know.***

7. Do you think that having just one English Pronunciation course is enough for students in the major?

*We can change or split pronunciation. **We can have one pronunciation for a basic level and we can have another pronunciation for an advanced level.** One that is only for students to produce the sounds and the other for them to know about the theory*

8. In terms of curriculum, how do you evaluate or assess the distribution of English Pronunciation instruction along (throughout) the major?

I think 2 courses is enough, again, that depends on the nature and on the teachers also, because we work according to the Ss' needs. I work according to student's needs and what I have seen all of these years is that they (have) lack (of) vocabulary. They are not ready for that level. They are not mature enough to face the three subjects, I think two courses is enough.

9. Which types of strategies would you recommend for students to learn pronunciation and for teachers to instruct students about it?

*The strategies depend on the units you teach, the content that you are going to teach. I have a virtual classroom and in the virtual classroom I can assess my students in many ways. I have online quizzes, I have audios, I have a lot of minimal pair exercises, and many words related to the pronunciations of some specific sounds. **For me technology is the basis of pronunciation because I am not a native speaker. So I***

*need my students hear native speakers. It is not the same to be hearing the teacher all the time than to have someone who manages the language naturally, so the best thing to approach my students to the goal is to have real (authentic) material, and the real material is related to native speakers, **audios and videos**.*

10. Which strategies do you use to teach English Pronunciation?

*I use **a lot of videos and my virtual classroom**. You know that is on fashion right now and you have direct contact with students because they are asking you in real time. I think that not only technology but also games. In pronunciation you can use games, especially because they are from second year.*

UNIVERSITY OF EL SALVADOR
WESTERN MULTIDISCIPLINARY CAMPUS
FOREIGN LANGUAGE DEPARTMENT

Interview 3

Questionnaire Guide for Interviewing Experienced Teachers on Pronunciation and
Intensive English Courses

Interviewer: Alejandro E. Peña G. and Ernesto D. Meléndez L. Date: 11/22/2017

1. How long have you been teaching the subject Morphology and Phonology for students majoring English Language? How many years and how many groups at once?

15 years teaching approximately, at the beginning 1 group. Now 2 groups 65 and 60 each group

2. We understand that, in the previous subject, there is a unit or chapter devoted to English pronunciation, isn't it?

Everything is related to English pronunciation that we assume that students already manage the phonological system, the phonemic system of English. So in phonology, we devote sometime to review the English phonemic system, as well as the Spanish system, because we contrast them. However it is just the near review...but we go deeper about the features of each sound. In phonology we study how sounds are combined, how they suffer changes, according to neighboring sounds. We also study intonation patterns.

3. Based on all these years of teaching experience, which vowel phoneme(s) do you consider the most difficult to repeat since the beginning and until the end of the subject?

They have a lot of problems with the phonemes that we don't have in Spanish. We have the tendency to produce vowel sounds almost in the same way as we produce (Spanish), the same length as we do it in Spanish because vowel reduction occurs slightly.

- 3.1 So, (given that you have mentioned reduced vowels), would you consider that schwa is one of the most difficult sounds?

Yes, of course!

4. Do you consider the size of your class groups appropriate for students' optimal learning? Are they the correct size for student's participation?

No, obviously not. (Because of the big size of class groups) students start bothering each other, making riots, and so on. [He does not give a specific number about the size].

5. How many students do you consider appropriate for an English Pronunciation group to develop a better teaching-learning process? How many do you attend as an average?

*At this time we have been assigned big classrooms but in previous years there were students sitting on the floor, **a better room according to the size but not according to acoustics**, which is something important for such classes. When teaching pronunciation the acoustics of the room plays such an important role in perceiving the sounds. . [He does not give a specific number about the size].*

6. Do you use the laboratory equipment or any other technological resources to teach your classes of Morphology and Phonology? In which other subjects? *No, indeed*

because of the inconveniences we have, we haven't been assigned the lab so often.

7. Any suggestions to improve the language lab, either regarding hardware or software?

One lab is not enough for the (class) group to be working there. It doesn't help at all...obviously to learn a new language Ss must be exposed to native speakers.

8. Do you consider that it is a good idea to take English Pronunciation in the second year of the major? Is it taught at the right moment along the major? Why?

They manage the vocabulary necessary to understand quite well but there are other factors that affect their learning. Students are just coming to be with their friends. There are many factors.

9. Do you think that having just one English Pronunciation course is enough for students in the major?

That depends on the way the teacher develops the subject because if we are to have an intensive, let's say, practice of the sounds as it is required to learn such field I think it is necessary to have more than one.

10. In curricular terms, how do you evaluate or assess the distribution of English Pronunciation instruction along (throughout) the major?

The point is that in some instances we isolate English pronunciation from other subjects, but English pronunciation is present in every single subject where English is taught. So, English pronunciation is modeled in all the courses related to the English language learning.

11. Which types of strategies would you recommend for students to achieve English vowel phoneme pronunciation accuracy and for teachers to instruct students about it?

*As I said before on the part of the teachers, **English pronunciation should be taught from basic levels till advanced/ levels even in readings and conversations**...you cannot, let's say, ignore English pronunciation. When we are speaking a language we are producing sounds. Even teachers are modeling sounds.*

12. Which strategies do you use to teach English Pronunciation or phonetics as part of the advanced course you teach?

Sometimes I use videos, recordings, but not that often. The ideal thing in that kind of courses is to expose Ss to native speakers talk. Sometimes we are more worried about developing our contents than we have to cover the final output. It is sad when we ask them to transcribe and they don't even know how to recognize a specific sound.

13. From your academic vast experience, which is the most common or most frequent vowel phoneme in spoken English?

I guess the most common is I the point is that are different sorts of /ae/ sounds for example cat. Some people called stress schwa. Remember that schwa occurs in the majority of words containing more than one syllable because one is stressed and the other unstressed. So that schwa is not a phoneme schwa is an allophone. It takes the sounds of all the vowels in a stressed position.

14. From your academic vast experience, which is the second most common or second most frequent vowel phoneme in spoken English? Remember that according to the resources, the percentage of occurrence is not that meaningful in the production of the sound because that is an easy sound to produce. Remember that sound are modified by neighboring sounds

t-test for examining equality of two sample means that correspond to Teaching Practice II and Seminar II students				
Sp =	1.25	[Estimated pooled S (sample St. Dev)]		
t* =	0.351			
Freedom degrees:		93		
t _{0.05} =	1.661			
	1.661	>	0.351	
Accept null hypothesis, then Sample Means are EQUAL				

The output data below corresponds the output given by the MedCalc Statistical Software for the F-test

Comparison of standard deviations... ? X

1st set of data

Standard deviation:

Number of cases:

2nd set of data

Standard deviation:

Number of cases:

Results

F statistic	1.2949
Significance level	P = 0.386

Comment:

Since P < F, the two variances and therefore the two standard deviations are not significantly different within a 95% certainty (The calculated P < 0.05)

? Clear Test Exit

Appendix H: Tabulated Data and Calculations

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																				
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Dominant type of productive spoken Engl.	Total hours a week (Exposure + production)
			Desktop	Laptop	TV	Phone	By a native speaker	Teaching [Q12]	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	Interactive	Non interactive	Total		
1	Call center	5	4			3	16	36			2	30			4	36	5	2	7	Classmates or friends	59.0
2	videos	4		6	3	10	10	13			3				10	13	10	6	16	clasmates or friends	39.0
3	youtub, videos	4	2	2	2	3	10	6	3						3	6	3	2	5	classmates, youtube	21.0
4	Call center	5	6	6	2	12	6	71	10		15	36			10	71	15	8	23	classmates or friends video confe	91.3
5	videos or movies	6	10			8	4	35		5	10		4		16	35	23	22	45	friends	84.0
6	videos	1		2	3	1	9	3							3	3	0	10	10		22.0
7	relatives abroad	5	1	5	8	10		11		8	1				2	11	13	8	21	classmates and friends	32.0
8	videos or movies	5	30			40	2	16							16	16	3	5	8	friends	26.0

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																						
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Dominant type of productive spoken Engl.	Total hours a week (Exposure + production)		
			Desktop	Laptop	TV	Phone	By Teaching [Q12]	By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	Interactive	Non interactive	Total				
			(hours a week)																				
9	videos	5	20		10	22	4	8			1	3					4	8	5	10	15	classmates	27.0
10	videos	6		24		40	30	33			1	15			1	1	15	33	35	35	70	Social net(Fb) teaching	91.3
11	videos, movies	6		10	8	12	3	14			3						11	14	20	20	40	classmates or friends	57.0
12	radio songs	5		2		1	7	2				1					1	2	9	10	19	conversations with friends	28.0
13	movies, songs	5		28		10	2	15	3			4					3	15	12	37	49	friends(fb)	66.0
14	videos,fb	3	3	3	2	5	20	2				1					1	2	5	2	7	classmates,relatives,and teaching	29.0
15	tv cable,movies	5		2	4	1	8	6									2	4	6	2	8	teaching	22.0
16						7		0										0	6	2	8	students	8.0
17	Call center	4	2			6	3	44				4	40					44	2	2	4		51.0

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																				
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Dominant type of productive spoken Engl.	Total hours a week (Exposure + production)
			Desktop	Laptop	TV	Phone	Teaching [Q12] By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	Interactive	Non interactive	Total			
																			(hours a week)		
18	tv cable	4	2			4	3	6							6	6	3	4	7	friends,teaching	16.0
19	videos or movies	5	3	1		2	60	11					8		3	11	6	2	8	sister	79.0
20	internet	2	2			4	15	9			0	0			6	9	9	18	27	friends, Fb, teaching	51.0
21	videos or movies	4		1	4	5	5	23	2		8				13	23	1	5	6		34.0
22	Call center	6	2	4	3	2	14	67		5	20	32			10	67	80	135	215	friends	91.3
23	videos, tv cable	4	4	2		2	25	5			1				4	5	4	6	10	conversations	40.0
24	videos or movies	5		3	1	5	16	10		3					7	10	9	3	12	teaching	38.0
25	tv cable, videos					12		16	0	12		3			9	12	3	11	14	classmates and friends	26.0
26	workmate	3				8		8	0	32		24		8		32	8	2	10		42.0

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																					
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Dominant type of productive spoken Engl.	Total hours a week (Exposure + production)	
			Desktop	Laptop	TV	Phone	Teaching [Q12] By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	(hours a week)						
																Interactive	Non interactive	Total				
27	tv cable,songs	6	1	4	7	3	4	10		5					3	2	10	12	105	117	friends,youtuber	91. 3
28	tv cable,songs	3		2	7	1	4	5		1	2					2	5	7	5	12	friends, students	21. 0
29	radio stations	5	36	12	33	20	0	33	5		10					18	33	18	50	68	friends	91. 3
30	Call center	5		1		1	2	4			2					2	4		4	4	teaching	10. 0
31	videos	5		10	2	6	2	8		2	3					3	8	16	10	26	teaching	36. 0
32	youtub,videos	4	2	10	7	66	4	15			10					5	15	29	30	59	teaching	78. 0
33	Call center	4	3		2	1	5	40			30					10	40	10	84	94	classmates or friends video confe	91. 3
34	videos or movies	3	5		5	10	10	0									0	12	2	14	teaching	24. 0
35	videos	3	3	1		2	4	40			25					15	40	40	10	50		91. 3

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																					
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Total hours a week (Exposure + production)		
			Desktop	Laptop	TV	Phone	Teaching [Q12] By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	(hours a week)			Dominant type of productive spoken Engl.			
																Interactive	Non interactive	Total				
36	relatives abroad	5					4	4	4								4	17	12	29	teaching	37.0
37	videos or movies	3	3	2	9	1	1	30			20					10	30	24	20	44	friends	75.0
38	videos	4		2	1	1	32	0									0	18	35	53	classmates	85.0
39	videos	4		3			18	10	0								0	20	10	30	teaching	40.0
40	videos, movies	4	2			1	20	24	20		4						24	22	14	36	classmates or friends	80.0
41	radio songs	2						10	10								10	4	2	6	conversations w/ friends	16.0
42	movies, songs	4	2	6	6	5		10			6				4		10	12	11	23	teachers	33.0
43	videos,fb	3					2	8	0								0	4	8	12	teaching	20.0
44	tv cable,movie	2		6			5	10	0								0	10	12	22	teaching	32.0

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																				
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]								Production of spoken Eng [Q4-5]III			Total hours a week (Exposure + production)	
			Desktop	Laptop	TV	Phone	By Teaching [Q12]	By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	(hours a week)				
																	Interactive	Non interactive	Total		Dominant type of productive spoken Engl.
s																					
45		2	3	3		2	6	3							3	3	1	2	3	teaching	12.0
			33 9% 43																		
			16% % %																		
Total:			91	18	3	49	9	23	26	27.02			11								
n:	43	24	31	22	43	38	39	8	10	26	5	5	2	34	39	44	45	45		45	
Mean:	4.1					9.7	16.1							16.1	13.0	17.7	30.4			47.4	
Max:						60.0	71.0								80.0	135.0	215.0			91.3	
Min:						0.0	0.0								0.0	2.0	3.0			8.0	
St. Dev:						11.1	17.0								13.6	27.0	37.3			27.6	

Student	ENVIRONMENTAL FACTORS (EXPOSURE TO SPOKEN ENGLISH AND ITS PRODUCTION)																			
	Dominant type of exposure [Q10]	Types of exposure [Q4]	Technology tools access [Q6]				Additional exposure hours		Type of exposure to native speaker(s) [Q12]							Production of spoken Eng [Q4-5]III			Total hours a week (Exposure + production)	
			Desktop	Laptop	TV	Phone	Teaching [Q12] By a native speaker	Courses	Relatives abroad	Social Network	Call Center	Coworker	Neighbor	Videos	Total	(hours a week)				
																Interactive	Non interactive	Total		Dominant type of productive spoken Engl.

56

STATISTICALLY RECOMMENDED

2

HOURS A WEEK:

102

Maximum Statistical value

102

.0

Maximum physically possible

90

Student	ENVIRONMENTAL FACTORS (LEARNING RESOURCES)														
	Educative resources in 3 ^{ed} y?								Get corrected enough in 3 rd y by teacher? [Q18]	Still check pronunc in 5 th year? [Q12]	Words corrected in 4 th y (T. Pract) [Q14]	Number of pre-presentation rehearsals [Q10]	Already-known-prono words [Q8]	Example of words checked in Dictionary [Q13]	Example of phonemes checked in Dictionary [Q13]
	Use of dictionary and Other resources [Q6-Q10]														
	Yes	No	Known words [7]	Unknown words [7]	Elect dictionary? [Q6]	checked words [Q8]	Corrected words [Q9]	Rehearsal [Q10]							
1	1		1	1	1	8	5	yes	no	yes	3	3	4	3	ʌ, æ, ə
2	1			1	1	20	10	yes	yes	no	0	2	0	0	
3	1		1	1	1	10	10	no	no	yes	5		0	0	
4	1			1	1	3	1	yes	no	no	2	3	1	1	
5	1			1	1	6	4	yes	no	yes	2.5	3	0	2	
6	1			1	1			yes	yes	yes	6	5	0	0	
7	1			1	1	10	5	no	no	yes	2		8	1	
8	1		1	1	1	10	5	yes	yes	yes	5	2	5	5	
9	1			1	1	5		no	yes	no			3	0	
10	1			1	1	4	2	yes	yes	no		2	3	0	
11	1		1	1	1	4	10	no	yes	yes	3		4	0	
12	1			1	1	30	12	no	yes	yes	10		20	8	
13	1			1	1	3	2	yes	yes	yes	2	2	0	1	ɔ, ə
14	1		1	1	1	5	10	no	yes	yes	3		0	1	ɪ, ə
15	1		1	1	1	10	5	no	yes	no	1		5	1	
16	1			1	1	25	20	yes	yes	yes	3	3	17	0	
17	1		1	1	1	5	2	no	no	yes	2		0	0	
18	1		1	1	1	100	50	no	yes	yes			80	1	
19	1			1	1	10	10	yes	yes	yes	2	3	0	2	
20	1		1	1	1	10	5	yes	no	no	4	4	4	0	
21	1		1	1	1	2	10	no	yes	yes	4		2	1	
22	1		1	1	1	10	1	yes	yes	yes	10	2	5	0	
23	1		1	1	1	15	3	yes	yes	yes	6	1	5	0	
24	1			1	1	5	10	yes	no	no	3	3	3	2	
25	1		1	1	1	8	3	yes	yes	yes	2	2	3	1	ʊ
26	1		1	1	1	10	4	yes	no	yes	0	2	0	0	
27	1			1	1		2	yes	no	yes	2	1	0	2	
28	1		1	1	1	3	5	yes	no	yes	5	2	4	0	
29	1			1	1	5	10	yes	yes	yes	3	2	2	2	
30	1		1	1	1	10	5	no	yes	yes	9		5	0	
31	1			1	1	6	10	yes	yes	yes	5	2	3	0	
32	1		1	1	1	5	20	yes	yes	yes	3	2	2	1	ɪ

33	1		1	1	1	5	5	yes	yes	no	2	2	5	0	
34	1		1	1	0	4	10	yes	yes	yes	5	1	4	0	
35	1		1	1	2	5	2	yes	yes	no	2	3	1	0	
36	1		1	1	0	4	5	yes	no	no	2		1	0	
37	1			1	1	10	20	yes	yes	yes	5	2	10	0	
38	1			1	1	10	20	yes	yes	yes	2	2	5	0	
39	1		1	1	-1	5	5	yes	no	yes	3	2	5	0	
40	1			1	0	10	5	yes	no	no	3	3	0	0	
41	1			1	1	2	3	no	yes	yes	2		0	4	
42	1		1	1	1	5	6	yes	yes	yes	4.5	1	0	2	e, ə
43	1		1	1	1	6	8	yes	no	yes	9	1	0	2	
44	1			1	2	4	6	yes	yes	yes	2	1	2	2	
45	1		1	1	2	9	2	yes	yes	yes	2	1	0	0	

Pre-average 2.2

Percentage	100%	55.6%	100%	73.3%	66.7%	75.6%	88.9%	71.1%	66.7%	46.7%	13.3%		
Total:	45	0	25	45	43	43	40	32	30	21	6		
n:	45	0	25	45	41	43	33	30	34	42	32	45	45
Mean:				10.1	8.1		3.6	2.2	4.9	2.1			
Max:				100.					80.				
Min:				0	50.0		10.0	5.0	0	8.0			
St. Dev:				2.0	1.0		0.0	1.0	0.0	0.0			
									12.				
				15.0	8.2		2.4	0.9	0	1.7			
CORRECTED STATISTICS						66.4							
						9							
n:				42	42				44	21			
Mean:				8.0	7.1				7.4	2.1			
Max:				30.0	20.0				20.				
Min:				2.0	1.0				0				
St. Dev:				5.7	5.2				14.				
									3				

Student	PRONUNCIATION INDEX [Q18]												
	Pronunciation score										Average grade	Test Key (1, 2)	
	/æ/	/a/	/ɪ/	/ʊ/	/u/	/ə/	/oo/	/ʌ/	/ə/	Set			
1	3	5	9	5	6	9	2	2	3	44	5.50	1	
2	5	4	11	5	5	3	3	4	5	45	5.63	1	
3	4	6	12	4	6	7	2	2	4	47	5.88		2
4	2	7	9	8	2	9	3	3	0	43	5.38	1	
5	1	6	8	4	2	8	1	2	6	38	4.75	1	
6	1	5	7	4	6	7	3	3	7	43	5.38		2
7	2	4	9	6	4	6	3	3	0	37	4.63	1	
8	4	5	10	5	4	8	3	3	12	54	6.75		2
9	2	4	6	5	6	6	2	1	2	34	4.25		2
10	1	6	12	6	5	10	3	3	3	49	6.13	1	
11	4	7	11	4	0	9	2	2	2	41	5.13		2
12	2	4	7	6	4	5	1	2	5	36	4.50	1	
13	3	4	9	4	5	9	3	1	3	41	5.13	1	
14	3	1	8	4	6	4	1	2	8	37	4.63		2
15	5	6	7	7	6	4	2	0	4	41	5.13	1	
16	3	6	7	2	2	8	2	3	7	40	5.00	1	
17	0	0	0	0	0	0	0	0	8	8	1.00		2
18	0	0	0	0	0	0	0	0	1	1	0.13	1	
19	2	5	7	5	4	7	5	2	12	49	6.13		2
20	1	0	8	3	5	2	3	0	4	26	3.25		2
21	3	7	12	5	4	7	2	0	1	41	5.13	1	
22	2	4	13	4	2	7	3	3	5	43	5.38		2
23	3	6	12	0	0	11	3	2	2	39	4.88	1	
24	3	5	7	5	5	6	3	1	11	46	5.75		2

25	3	7	7	7	5	8	3	2	7	49	6.13	1	
26	3	0	3	2	0	3	1	1	2	15	1.88		2
27	2	4	5	4	3	2	3	0	1	24	3.00		2
28	2	6	5	4	4	6	3	2	1	33	4.13	1	
29	4	6	12	8	6	9	4	4	7	60	7.50		2
30	4	1	5	3	2	1	3	1	2	22	2.75	1	
31	2	5	9	6	3	9	3	2	9	48	6.00	1	
32	2	6	8	2	4	10	3	4	3	42	5.25		2
33	2	6	10	5	6	10	4	2	7	52	6.50	1	
34	3	5	9	8	4	9	4	4	4	50	6.25	1	
35	1	3	7	4	6	9	2	2	6	40	5.00		2
36	2	7	10	3	3	11	2	2	5	45	5.63	1	
37	2	4	9	2	2	7	5	3	5	39	4.88		2
38	4	5	9	6	6	10	4	2	1	47	5.88		2
39	1	4	9	4	4	7	3	1	6	39	4.88	1	
40	1	5	8	5	2	8	4	2	5	40	5.00		2
41	3	7	12	4	6	7	1	0	4	44	5.50	1	
42	3	1	1	0	2	0	0	0	8	15	1.88	1	
43	3	0	6	3	5	8	3	1	3	32	4.00		2
44	1	6	10	6	5	8	1	4	4	45	5.63	1	
45	3	6	6	6	6	7	2	3	5	44	5.50	1	

Max score:	Key 1 Key 2	5	7	17	8	6	11	6	5	15	80	2
												5
		5	7	16	8	6	11	6	5	16	80	2
												0

Test composition	6.3%	8.8%	20.6%	10.0%	7.5%	13.8%	7.5%	6.3%	19.4%	100%	
n:	43	40	43	41	40	42	42	37	43	45	45
Mean score:	2.4	4.5	8.0	4.3	3.8	6.7	2.5	1.9	4.7	38.8	4.9

Max score:		5.0	7.0	13.0	8.0	6.0	11.0	5.0	4.0	12.0	60.0	7.5
Min score:		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1
Score St. Dev:		1.2	2.2	3.0	2.0	1.9	3.0	1.2	1.2	3.0	11.7	1.5
Mean Grade		4.89	6.38	4.86	5.36	6.41	6.08	4.19	3.82	3.01	4.86	

**Passing
Students:
Passing
rate:**

**8
18%**

Number of students	22	27	10	21	29	21	7	14	4	8	Statistics of passing students per vowel sound
Percentage	48.9%	60.0%	22.2%	46.7%	64.4%	46.7%	15.6%	31.1%	8.9%	17.8%	
Score (average of class)	3.5	5.4	11.3	6.0	5.1	8.4	4.3	3.4	11.0	51.9	
Grade (average of class)	6.9091	7.7381	6.8531	7.4405	8.50575	7.6667	7.1429	6.7143	7.097	6.5	

Student	PRONUNCIATION INDEX [Q18]												
	Pronunciation score										Average grade	Test Key (1, 2)	
	/æ/	/a/	/ɪ/	/ʊ/	/u/	/ɔ/	/oo/	/ʌ/	/e/	Set			
1	3	5	9	5	6	9	2	2	3	44	5.50	1	
2	5	4	11	5	5	3	3	4	5	45	5.63	1	
3	4	6	12	4	6	7	2	2	4	47	5.88		2
4	2	7	9	8	2	9	3	3	0	43	5.38	1	
5	1	6	8	4	2	8	1	2	6	38	4.75	1	
6	1	5	7	4	6	7	3	3	7	43	5.38		2
7	2	4	9	6	4	6	3	3	0	37	4.63	1	
8	4	5	10	5	4	8	3	3	12	54	6.75		2
9	2	4	6	5	6	6	2	1	2	34	4.25		2
10	1	6	12	6	5	10	3	3	3	49	6.13	1	
11	4	7	11	4	0	9	2	2	2	41	5.13		2
12	2	4	7	6	4	5	1	2	5	36	4.50	1	
13	3	4	9	4	5	9	3	1	3	41	5.13	1	
14	3	1	8	4	6	4	1	2	8	37	4.63		2
15	5	6	7	7	6	4	2	0	4	41	5.13	1	
16	3	6	7	2	2	8	2	3	7	40	5.00	1	
17	0	0	0	0	0	0	0	0	8	8	1.00		2
18	0	0	0	0	0	0	0	0	1	1	0.13	1	
19	2	5	7	5	4	7	5	2	12	49	6.13		2
20	1	0	8	3	5	2	3	0	4	26	3.25		2
21	3	7	12	5	4	7	2	0	1	41	5.13	1	
22	2	4	13	4	2	7	3	3	5	43	5.38		2
23	3	6	12	0	0	11	3	2	2	39	4.88	1	
24	3	5	7	5	5	6	3	1	11	46	5.75		2
25	3	7	7	7	5	8	3	2	7	49	6.13	1	
26	3	0	3	2	0	3	1	1	2	15	1.88		2
27	2	4	5	4	3	2	3	0	1	24	3.00		2
28	2	6	5	4	4	6	3	2	1	33	4.13	1	
29	4	6	12	8	6	9	4	4	7	60	7.50		2
30	4	1	5	3	2	1	3	1	2	22	2.75	1	
31	2	5	9	6	3	9	3	2	9	48	6.00	1	
32	2	6	8	2	4	10	3	4	3	42	5.25		2
33	2	6	10	5	6	10	4	2	7	52	6.50	1	
34	3	5	9	8	4	9	4	4	4	50	6.25	1	
35	1	3	7	4	6	9	2	2	6	40	5.00		2
36	2	7	10	3	3	11	2	2	5	45	5.63	1	
37	2	4	9	2	2	7	5	3	5	39	4.88		2
38	4	5	9	6	6	10	4	2	1	47	5.88		2
39	1	4	9	4	4	7	3	1	6	39	4.88	1	
40	1	5	8	5	2	8	4	2	5	40	5.00		2
41	3	7	12	4	6	7	1	0	4	44	5.50	1	
42	3	1	1	0	2	0	0	0	8	15	1.88	1	
43	3	0	6	3	5	8	3	1	3	32	4.00		2
44	1	6	10	6	5	8	1	4	4	45	5.63	1	
45	3	6	6	6	6	7	2	3	5	44	5.50	1	

Appendix I: Descriptive Data of Personal and Environmental Factors

I-1 Analysis of Personal Data and Results by Age and Gender

TABLE I-1a ANALYSIS OF RELEVANT PERSONAL DATA BY AGE AND GENDER. SEMINAR II STUDENTS (FIFTH YEAR). SAMPLE SIZE 45 Ss.									
(1) Type of statistical parameter by gender	(2) Number of students	(3) GPA (Grade Point Average) Scale: 1 to 10	(4) Age at admission year	(5) Access time to ICT tools (hour a week)a	(6) Time devoted to job(h/week)	(7) Time devoted to job and extracurricular activities (h/week)	(8) Students that studied another major before	(9) Part time or subject-flunking students	(10) Vowel Pronunciation Grade (scale 1 to 10)
Masculine Mean/Total:	18	7.72	18.3	21.5	20.4	19.9	8	4	5.42
Femenine Mean/Total:	27	7.42	18.9	17.0	12.6	22.0	4	14	4.48
Difference:	X	0.30	0.5	4.5	7.8	2.1			0.94
Total	45						12	18	
Irregular students (admission year reported)							30		66.7%
Presumably Irregular students (unspecified admission year)							6		13.3%
Regular students (admitted in 2013 and taking all the subjects)							9		20.0%

Note: Columns (2), (8), and (9) correspond to totals by gender, the rest of columns to class-

mean values by gender. Irregular students include both categories of columns (8) and (9).
SOURCE: Questionnaire-survey to Seminar II Ss., UES, Nov 2017.

Congruent with other analyses by age and gender carried out abroad on English pronunciation studies, the analysis of results of the vowel pronunciation test by age and gender is presented in Table I-1a above and Table I-1b below, which display the most relevant data that are the most likely to have academic implications regarding pronunciation, either cognitively or emotionally.

The results are apparently controversial for both populations: while males from Seminar II population performed better by about 0.9 points, females from the second population (Teaching Practice II) outperformed males by 0.2 points in the pronunciation written test, using a scale from zero to ten. However, the opposing results may obey to skewness due to sample sizes not large enough, 45 and 50 students for each population, respectively. For this reason and given the equal English level of both populations, the sum of them is permitted to obtain a more reliable size of 95 students. By doing so, boys resulted advantageous again by an increment of 0.4 points (Table I-1b below).

It should be noted though that males were 0.5 years younger than males, and females 0.2 years younger than males, for populations 1 and 2, respectively, so that youth resulted directly related and even proportional to the differentials advantages of 0.9 and 0.2 points that the youngest groups of both populations achieved in the pronunciation test, as well as directly related to their respective GPAs. It is also interesting to note that the percentage of regular students remains around 20% for both populations (column 10 Tables I-1a and I-1b).

Based on Table I-1a, from the total sample of 45 students of Seminar II (2nd column), 18 were males and 27 females, which yields a distribution of 40% and 60%,

TABLE I-1b ANALYSIS OF RELEVANT PERSONAL DATA BY AGE AND GENDER. TEACHING PRACTICE II (FOURTH YEAR) AND SEMINAR II STUDENTS (FIFTH YEAR). SAMPLE SIZE 95 Ss.									
(1) Type of statistical parameter by gender	(2) Number of students	(3) GPA (Grade Point Average) Scale: 1 to 10	(4) Age at admission year	(5) Access time to ICT tools (hour a week)a	(6) Time devoted to job(h/week)	(7) Time devoted to job and extracurricular activities (h/week)	(8) Students that studied another major before	(9) Part time or subject-flunking students	(10) Vowel Pronunciation Grade (scale 1 to 10)
Masculine Mean/Total:	33	7.53	18.7	18.0	19.4	15.8	14	9	4.97
Femenine Mean/Total:	62	7.45	18.9	18.8	12.2	18.9	15	26	4.56
Difference:	X	0.08	0.20	0.8	7.2	3.1			0.41
Total	95						29	35	
Irregular students (admission year reported)							64		67.4%
Presumably Irregular students (unspecified admission year)							11		11.6%
Regular students (admitted in 2013 and 2014 and taking all the subjects)							20		21.1%

Note: Columns (2), (8), and (9) correspond to totals by gender, the rest of columns to class-mean values by gender. Irregular students include both categories of columns (8) and (9).

SOURCE: Questionnaire-survey to Teaching Practice II and Seminar II Ss., UES, Nov 2017, correspondingly. Regarding the results of the written test on vowel sound pronunciation (last column), the Masculine gender obtained a one-point advantage, based on a scale from 1 to 10.

Since girls and boys were graded with an overall class grade (mean value) of 4.48 and 5.42, respectively, males answered about 25% more than females.

Also, according to the GPA (third column), male students are slightly above female students by three-tenths of a point (0.3). In relation to the average age when admitted at UES, males entered the university half a year younger than females, with a mean age of 18.3 years. Thus, despite the minor difference in average age by gender, the males' lower age somewhat correlates with both the higher GPA and the higher mean grade in the written pronunciation test for the whole class according to gender. However, it is fair to say that, in general, girls were a little busier than boys and had a little less access than boys to ICT tools. When asked about the time devoted to their job and extracurricular activities, women (column 7) reported 2.1 more hours a week than men, while men said to have had 4.5 more hours a week available than women to access ICT tools.

In a few words, time devoted by women to job plus the commitment level of females in extracurricular activities like, sports, arts, and religion, added to other responsibilities or duties like household chores, child/elder care, boyfriend/girlfriend, humanitarian service, or others resulted somewhat higher than the total amount of time spent by males in the same three types of activities. This higher level of responsibility on the female's side is very probably the cause of higher stress whenever it comes to evaluations. As already explained, in spite of the fact that males worked an average of 8 hours a week more than females (column 6), the total time spent in jobs plus the other types of activities is higher for women than it is for men.

Column (8) accounts for students whose first optional major was other than English language, so that they did not voluntarily choose to study English in the first place. Column (9) computes the students admitted at UES before 2013 so that they had been studying more than five years and consequently left behind their peers, either because of their flunking any subject(s), because of their becoming part time students for financial reasons, or because of their interrupting of academic activities. Both column-groups represent risk for demotivating feelings in students. According to column (8) and (9), men err twice as much than women when choosing a major, but the latter ones fail thrice as much than the former ones when it comes to passing subjects or remaining full-time students, respectively. Data from column (8) are the only ones that change drastically for the other population of Teaching Practice II

students (50 Ss.), which means that, for them, women err twice as much than men when choosing a major. However a longitudinal analysis, adding up both populations, proves the typical averaging effect of statistical time series. When taking the 95 students, both males and females err equally when choosing their right profession. However, the fact of females going strayed thrice as much remains the same, even with the averaging effect of both populations.

Interestingly, one of the most important academic implications on the variables under study is the addition of the data contained in columns (8) and (9). By doing this, a subtotal of irregular students is obtained, which can be added up to other subtotal of presumably-irregular students, who did not specified their admission year at UES. In a simpler way, the last row shows that only 9 out of 45 students (20%) have proved being regular, full-time students, who have not flunked a subject, interrupted their studies, or became part-time students through the major. Unsurprisingly, the percentage of regular students was similar for the Teaching Practice II students' population, for which only 11 out of 50 students (22%) resulted to be regular. This leaves room to speculate that 70% to 80% of students registered in two consecutive generations of the major would not have, in an ample sense, the right aptitude, attitude, or motives to study an English teaching major. For scientific rigor's sake, data from both columns are statistically independent, which means that no overlapping takes place, so that their total can be summed up.

I-3 Use of Pronunciation Learning Strategy

Graph I-1 below is based in an open question for students to express themselves without external influence of a multiple choice question. This graph reveals that around 50% of the students registered in Seminar II had not used any learning strategy for pronunciation improvement. Along with this discouraging percentage, according to strategy categories 5) and 6), which add up 14% more, students did not report the pronunciation source, method or technology they had used or the source was incomplete or inappropriate, respectively.

Thus, in actual or net figures, 65% of the pupils, nearly two thirds of the fifth-year generation, had not implemented yet any pronunciation improvement strategy, or had implemented a poor one at the moment of the survey. Another critique is that the effectivity of strategy number two (Use of phonetics), largely depends on its reinforcement by combining it with other in-context or emotional activities, like reading aloud or singing favorite songs.

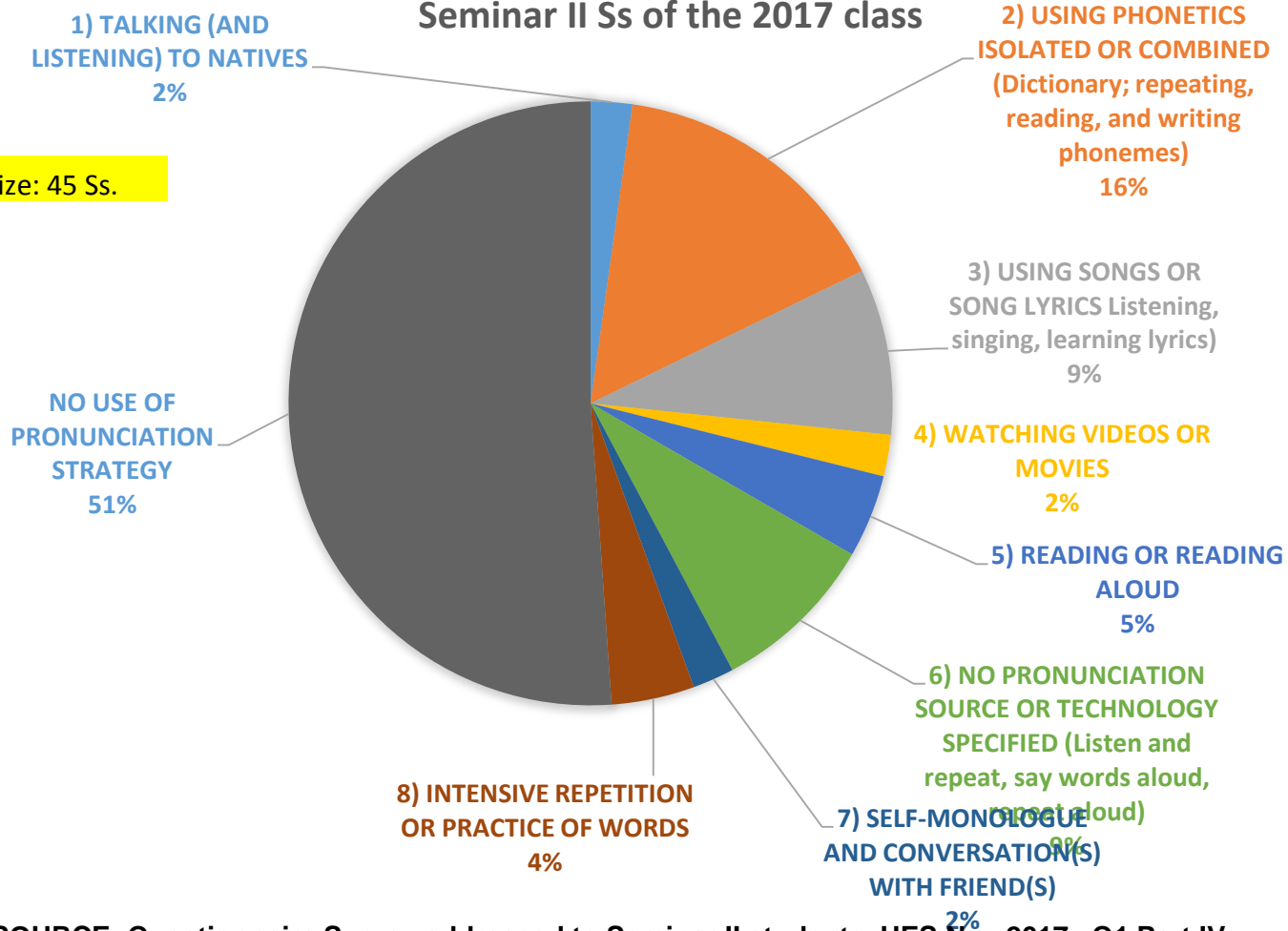
Otherwise, at least, such a strategy should be accompanied by intensive repetition, of which only 2% (2 Ss) said to have practiced. In comparison, a lesser 40% of Teaching Practice II students (4th year) expressed not to have implemented a pronunciation strategy yet.

Also, since less fourth-year pupils than fifth-year students, manifested not to have used any pronunciation improvement strategy at all, it seems then that fifth-year students' generation has also experienced a backwards evolution or involution that corresponds to a 10% decrease in the use of a strategy. Additionally, only one fourth-year pupil reported to have used the mirror for pronunciation self-assessment and only one expressed to have used a pronunciation rule saying that "function words are pronounced with schwa." Though this statement is only partially true, it has a huge qualitative importance in the sense that at least one student out of 95 had internalized part of the English pronunciation Grammar.

Graph I-1 Use of learning Strategies for Pronunciation Improvement.

Seminar II Ss of the 2017 class

Sample size: 45 Ss.



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 2017. Q1 Part IV

I-2 Personal Data According to Introversion and Extroversion

TABLE I-2a NUMBER OF STUDENTS ASSESSED AS INTROVERT, EXTROVERT, OR NEUTRAL AS PART OF PERSONALITY CHARACTERISTICS. SEMINAR II + TEACHING PRACTICE II (SAMPLE: 95 Ss)					
Gender	Introvert "I" / Extrovert "E" / Neutral "I/E"	I, E, or I/E according to 7 questions	I, E, or I/E according to self-definition	I, E, or I/E according to both	Average pronunciation grade
	I	12	18	13	5.7
Male	E	18	12	18	5.5
	I/E	3	3	2	6.0
	I	36	31	37	5.6
Female	E	16	27	16	5.7
	I/E	10	4	9	5.0
	TOTAL:	95	95	95	
Total (Male + Female)	I	48	49	50	5.6
	E	34	39	34	5.5
	I/E	13	7	11	5.0
	TOTAL:	95	95	95	

While nearly 40% and 60% of males and females, respectively, were classified as Introverts, almost 55% and 25% resulted Extroverts, in the same gender order, correspondingly (Table I-2b, column 5). According to mean grades of this table [column (6)], there is no clear advantage of Extroverts over Introverts, regardless the gender. There is some advantage though of those over Neutral Ss (last 3 rows, column 6). The only apparent advantageous students, those categorized as neutral or I/E (row 3, same column), obtained a mean pronunciation grade of 6.0. However by examining Table I-2a, it becomes clear that a size of 2 students is not representative, thus this datum being considered unreliable for serious analysis.

TABLE I-2b PERCENTAGE OF STUDENTS ASSESSED AS INTROVERT, EXTROVERT, OR NEUTRAL AS PART OF PERSONALITY CHARACTERISTICS. SEMINAR II + TEACHING PRACTICE II (95 STUDENTS)

Gender (1)	Introvert "I" / Extrovert "E" / Neutral "I/E" (2)	I, E, or I/E according to 7 questions (3)	I, E, or I/E according to self-definition (4)	I, E, or I/E according to both (5)	Average pronunciation grade (6)
	I	36.4%	54.5%	39.4%	5.7
Male	E	54.5%	36.4%	54.5%	5.5
	I/E	9.1%	9.1%	6.1%	6.0
	I	58.1%	50.0%	59.7%	5.6
Female	E	25.8%	43.5%	25.8%	5.7
	I/E	16.1%	6.5%	14.5%	5.0
Total (Male + Female)	I	50.5%	51.6%	52.6%	5.6
	E	35.8%	41.1%	35.8%	5.5
	I/E	13.7%	7.4%	11.6%	5.0

TABLE I-2c PRONUNCIATION GRADE ACCORDING TO INTROVERSION OR EXTROVERSION DEGREE LAYERS (SCALE FROM 5 TO 10). SEMUNAR II AND TEACHING PRACTICE II STUDENTS.

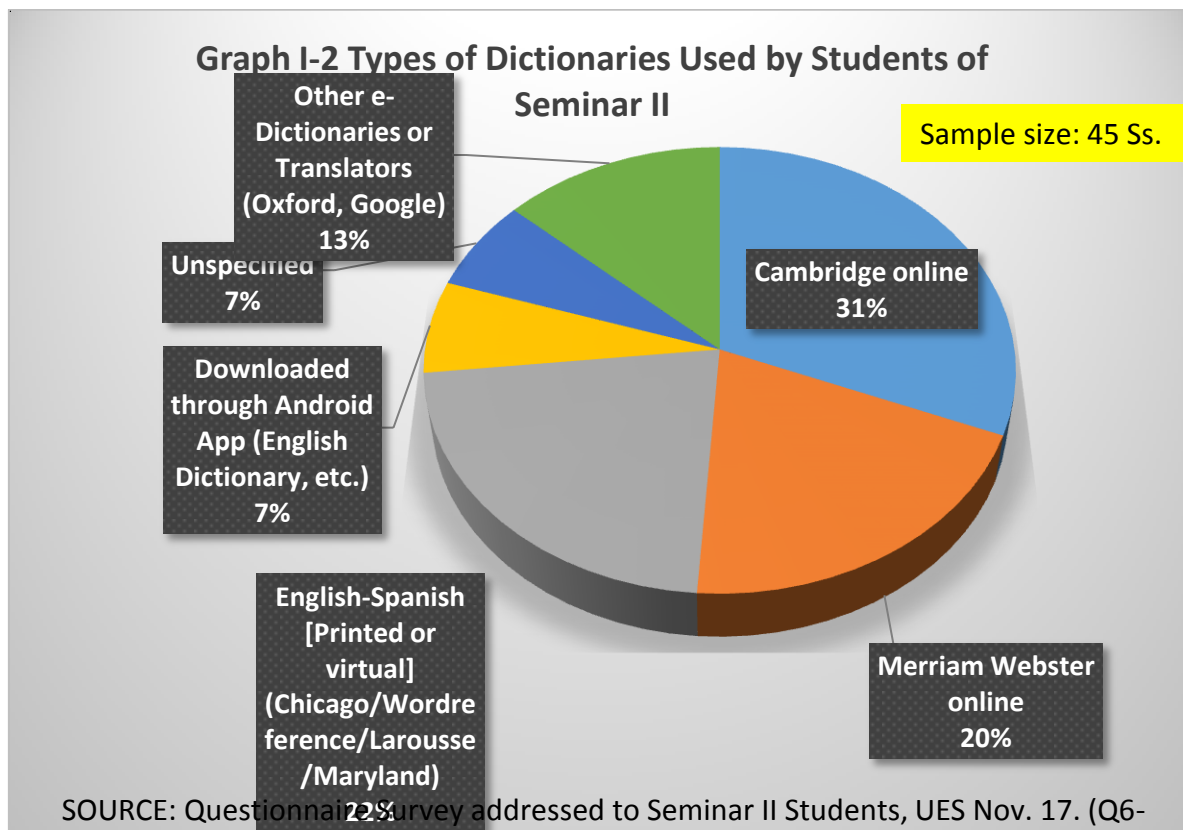
Introversion or Extroversion score range	Seminar II Ss		Teaching Practice II Ss		Sem. II + Teach. Practice II Ss	
	Number of students	Pronunciation grade (mean)	Number of students	Pronunciation grade (mean)	Number of students	Pronunciation grade (mean)
5.0 to 5.5	5	4.4	6	4.3	11	4.4
5.5 to 6.0	10	4.8	10	4.2	20	4.5
6.0 to 6.5	8	5.5	15	5.3	23	5.3
6.5 to 7.0	11	5.0	6	5.9	17	5.3
7.0 to 7.5	7	4.7	9	5.0	16	4.8

7.5 to 8.0	0	N/A	0	N/A	0	N/A
8.0 to 9.0	3	5.5	3	5.0	6	5.3
9.0 to 10.0	1	1.0	1	5.5	2	3.3
Total:	45		50		95	

Note: In the scale, 5 is equivalent to Neutral (I/E) and 10 is considered the most introverted or extroverted

Given the circumstances of no clear advantage of any subgroup by introversion versus extroversion, Table I-2c shows the tendency of pronunciation performance according to introversion/extroversion degree, using a scale from 5 to 10, 5 being neutral and 10 representing both extremes, most introverted or extroverted. There is a peak near the center of the scale, which becomes more evident as the sample size increases (last two columns), that is, for students scoring from 6 to 7 points of introversion/extroversion. Students near the extremes of the scale (10) or the neutral band (from 5 to 6) got the lowest grades.

I-4 Use of Dictionary and Pronunciation Software/Websites

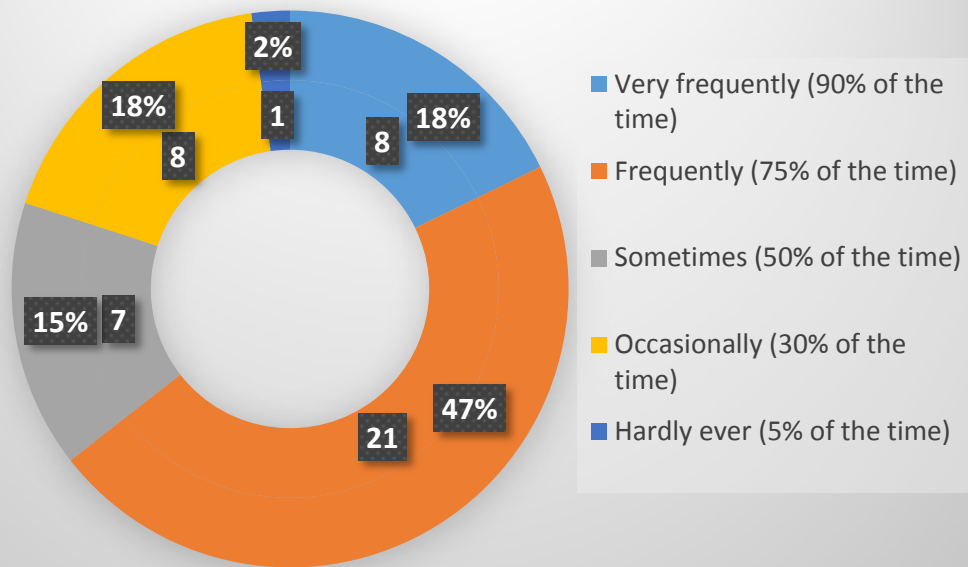


It is time to exhibit gathered data about the correct use of the dictionary. Going down to specific figures and relevant concepts on dictionary use, dictionaries based on the IPA (International Phonetic Alphabet) system are more familiar to the particular student populations under study because it is the main system studied in the lower-level pronunciation course, Semester III of the major. Cambridge online, Chicago, and Word reference use this phonetic alphabet system. Also, from the downloadable or offline dictionaries, there are around four with higher ratings, from which only the Android application called the English Dictionary by Livio displays the IPA system. Thus, based on the phonetic alphabet system, only 49% of students had used the right dictionary, since nonnative speakers occasionally may not be able to accurately reproduce the vowel sounds from dictionaries only by listening to the audio incorporated, thus relying more on the phonetic transcription. In comparison, only 41% of Teaching Practice II students informed to have used the right IPA dictionary, 8% less than the former students.

In trying to determine how much the students of Seminar II had used the dictionary, when asked about the frequency of use of the dictionary for pronunciation purposes, between semesters IV and VII of the major, their average answer was that they had used it 64.2% of the time (Graph I-3). The percentages that correspond to each qualitative frequency displayed in such a graph multiplied by the respective percentages of the population segments allowed the calculation of this global percentage. In contrast, calculations for Teaching Practice II students revealed that they had used it 59.1% of the time for the same time span, which meant 5% less than the former population.

So far, the overall result regarding dictionary use is that Seminar II students have utilized it qualitatively and quantitatively better than Teaching Practice II students, using the right dictionary 8% more and using it 5% more in time. Conversely, the former population has stood behind by 10% in implementing a pronunciation strategy, so that the advantages of one population over the other roughly cancel out mathematically.

Graph I-3 Frequency of Use of Dictionary by Seminar II Ss.



Sample size: 45 Ss. Mean use: 64.2 % of the time

SOURCE: Questionnaire Survey addressed to Seminar II Students, UES Nov. 17 (Q6-Part III)

There are even more revealing figures, determined by more in-depth questions. For example, only 55.6% of the students reported to practice the habit of looking up presumably-already-known-pronunciation words in the dictionary for pronunciation reassurance purposes, before their presentations for semesters IV through VII. However, when asked to list examples of words looked up for their last presentation, in fourth/fifth year, a reduced 46.7% of the students were able to list an average of 2.1 words and only 13.3% could write the corresponding phonemes to these type of words, which meant only 6 out 45 students.

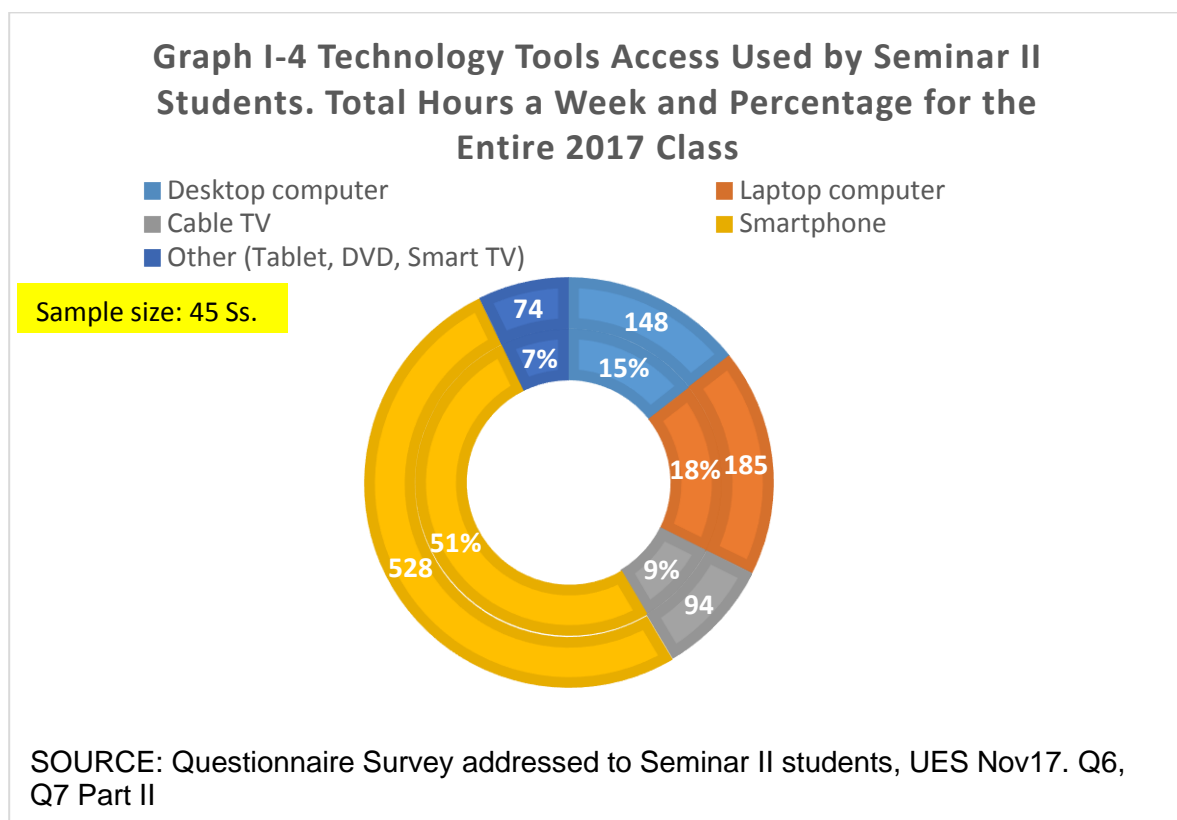
Though this low percentage might be related to the corresponding 11.1% of one of the 9 types of intelligences and the respective learning style (See 4.1), it could more likely be indicative of low rate of meaningful pronunciation learning on the students' side.

In regard to pronunciation software, websites, or web pages, no student reported to have used any, though they had the opportunity to report it (see Recommendations).

I-5 Access to ICT Tools

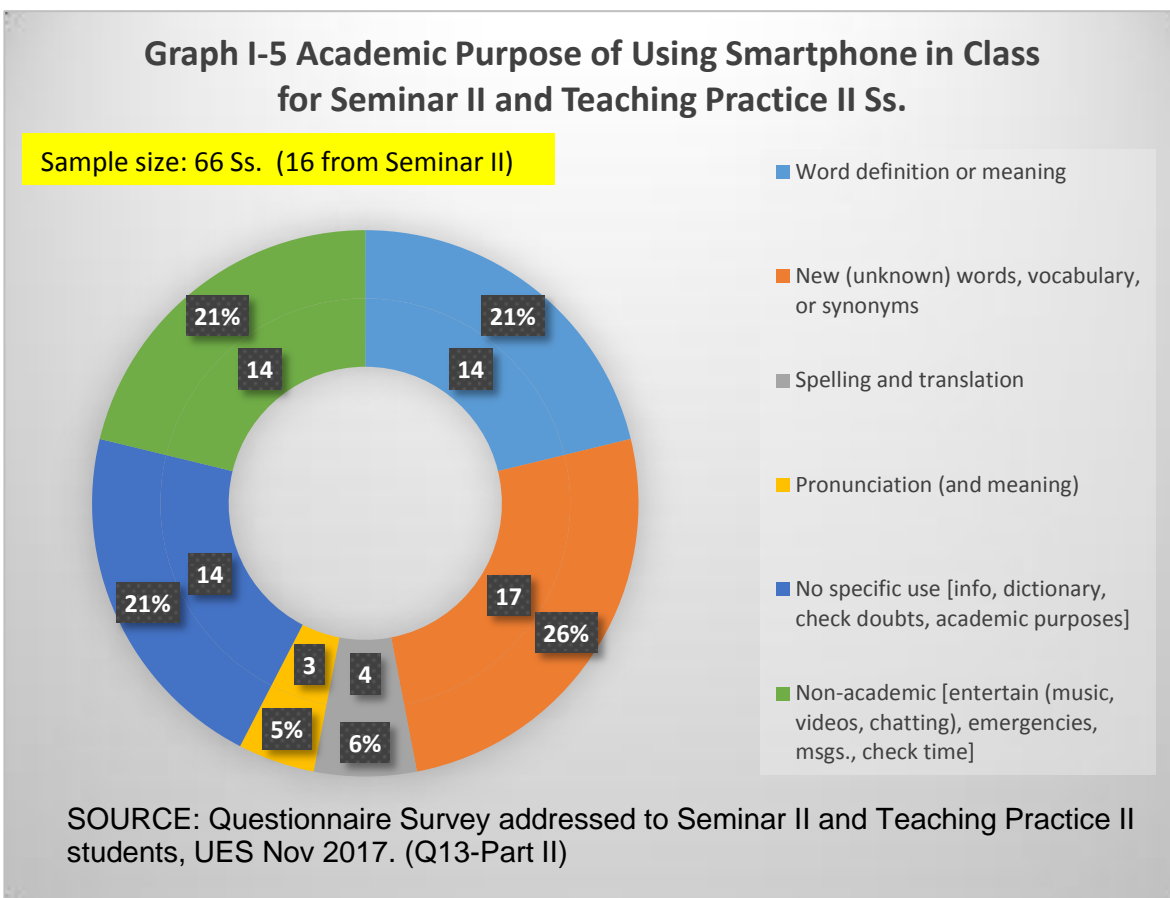
Graph I-4 below represents the technological tools that students of both groups of Seminar II reported to use at home and on campus for English learning purposes and the time they expend using each tool, in hours a week and its respective percentage. Considering this whole population (45 students), researchers concluded that 1030 hours weekly were invested by the total of students, both class groups, using Information and Communication Technology (ICT) tools.

Most of the time, the seminar II class collectively used smartphone during 528 hours weekly that represented 51% of the time, roughly half of the total time invested in ICT tools. In second place, they manifested to use a laptop for 185 hours weekly that meant 18% of the time.



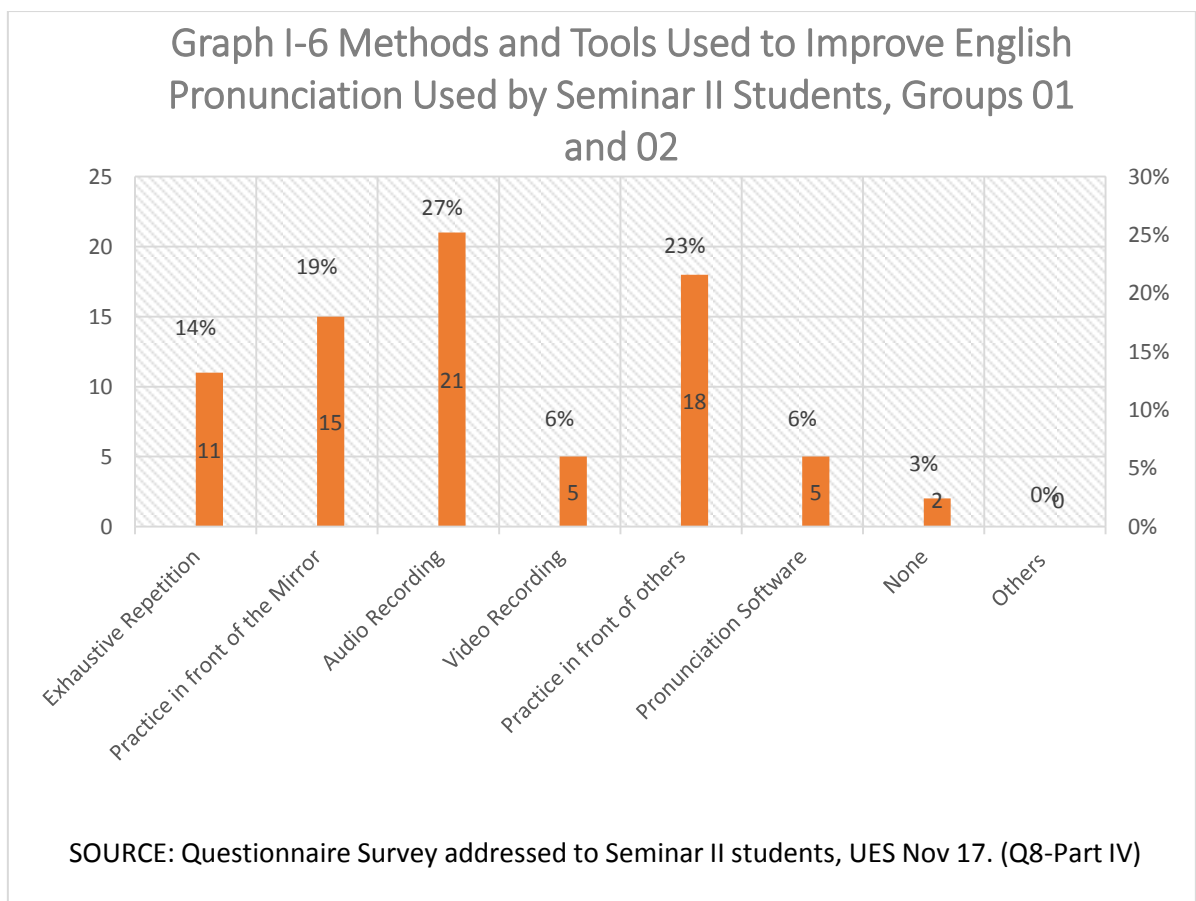
I-6 Use of Smartphone

Since the utilization of smartphone resulted dominant, it was crucial to determine the type of academic activities done with it. It is important to clarify that approximately every student devoted 23 hours weekly using ICT tools from which around half were dedicated to smartphones. This went from the effortless action of watching a movie or listening to music to more complex actions like using a pronunciation software to improve their English skills.



Returning to the smart cellphone as the main ICT tool, students were asked, by means of an open question, the main purpose of using cell phone in class (Graph J-5 above). The dominant use, with 26 percent, was somewhat ambiguously defined by the students as “new (unknown) words, vocabulary, and synonyms.” Unfortunately, only a minority 5 percent of them reported to have used the cellphone for pronunciation purposes. Hopefully the former 26 percent, though not specific, it includes the possibility of looking up words in a whole sense, including pronunciation.

I-7 Methods and Tools Used for Pronunciation Improvement

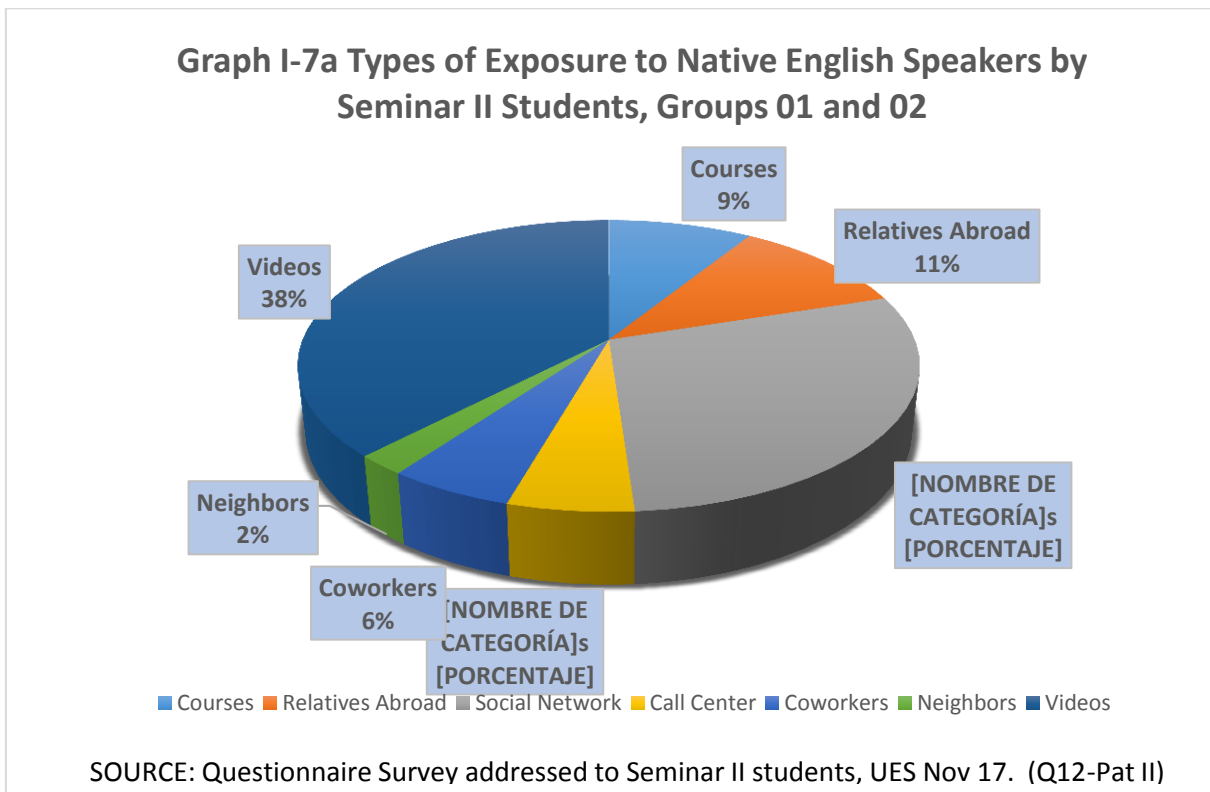


Graph I-6 above displays the methods and tools that Seminar II students specifically reported to use to improve their English pronunciation accuracy (EPA), when asked through a multiple choice question. It is essential to elucidate that more than one method can be used by the same student. Audio recording was the most used method, reported by 21 students representing the 27% of the methods or tools. The second most used category was practice in front of others, with 18 out of 45 students, representing the 23%. In the third place, practice in front of the mirror was used by 15 students representing the 19%, etc., etc.

However, by triangulation with other data collected by open questions, the research team judged the trustworthiness of the information contained in this last graph as very low to low. For example, no student at all mentioned to have practiced English sounds in front of the mirror as part of his/her learning strategy for pronunciation improvement (see Graph I-1). Only the category of exhaustive repetition was mentioned in the much lower number of only two students instead of the eleven displayed in Graph I-1 above.

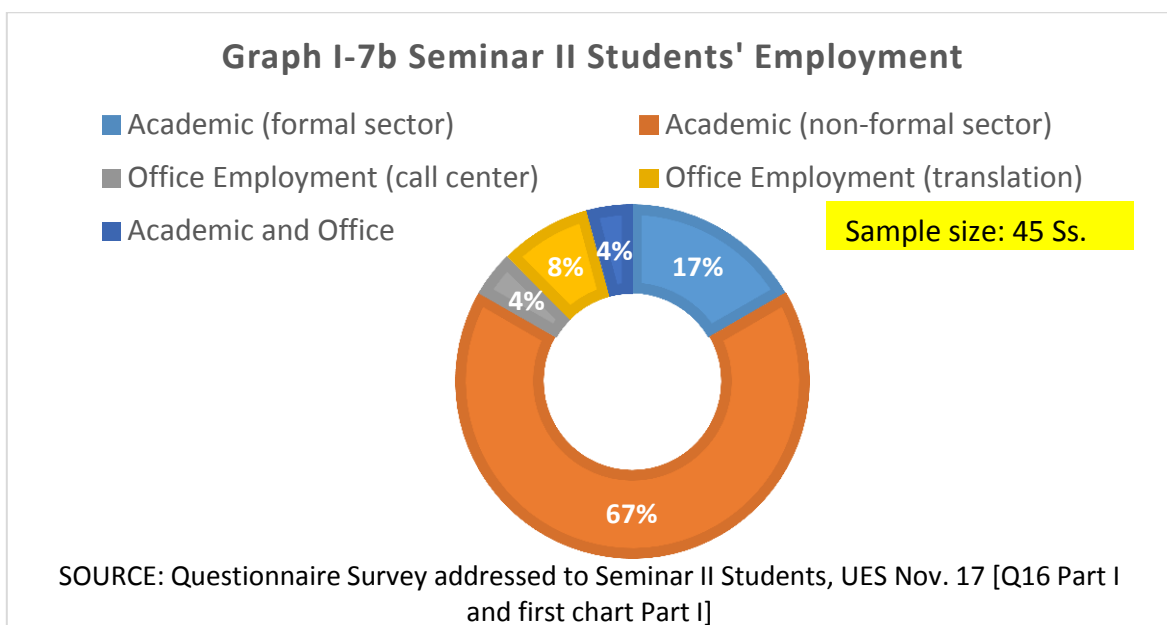
Graph I-7a exhibits essential information of the types of native-English exposure that students of Seminar II indicated to have been immersed in. The categories below belong to native English exposure which can be interactive or non-interactive to better their pronunciation accuracy. The composition of the graph displays the percentages for each type of exposure so that the non-interactive type of videos represented the most used method, with 38%. Social networks category took the 29%. Relatives abroad appeared in the third place with the 11%.

I-8 Types of Exposure to Native Speakers



One important aspect is that Call Centers took only the 5%, but it is one of the most interactive types of exposure to native English speakers, mostly Americans. Cross-checking indicates that data from graph I-7a are reliable. In fact, percentages contained on it, like call-center employment, agree, which is displayed in Graph I-7b below. Also, the 11% of relatives abroad indicated above is guaranteed by the percentage of students that manifested to have relatives abroad in the first table of the survey (personal information).

I-9 Employment and its Rate for Fifth and Fourth-year Students

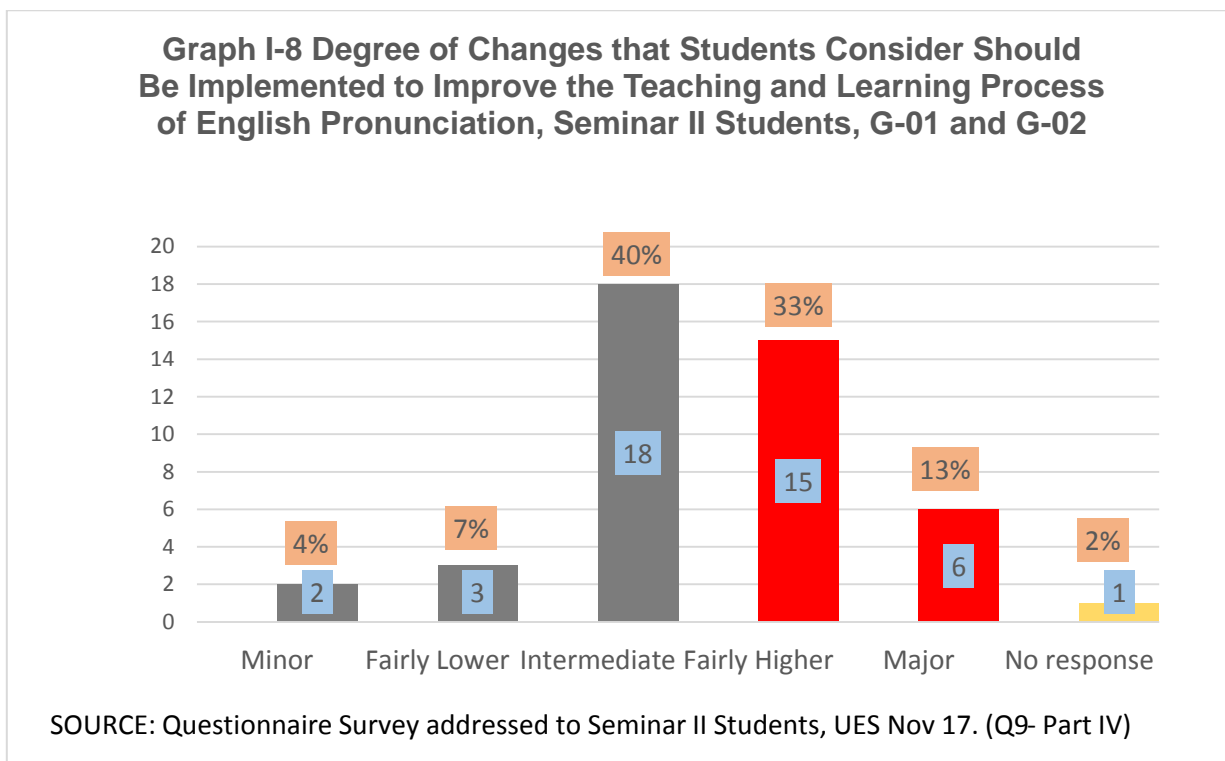


As shown in Table I-3 below, 24 out of 45 students (53.3%) of Seminar II were employed under the categories specified, of which only 12 students, half of the working-population, had an hourly job. Most of the remaining 12 students were hired under the part-time category and only 2 of them are full-time workers, both in call centers. In contrast, only 14 out of 50 students (28%) of Teaching Practice II informed to be employed. The considerable change in the rate of employment, from 28% to 53%, for fifth-year students, establishes a different social dynamic, which is not meaningless to consider at the time of examining correlations, especially global.

Table I-3. Employment data from Seminar II students (fifth year)

Type of employment	Full-time or Part-Time job			Hourly job (≤ 10 h/week)	Total Ss employed	Rate of Ss employed
	Full	3/4	1/2			
Ss	2	2	8	12	24	53.3%

I-10 Changes in Learning Resources Suggested by Students



Teachers constitute one of the most important learning resources not to say the most important because they are the most influential ones in the cognitive and affective domain. On this regard, Graph I-8 encloses the opinion of Seminar II students regarding the degree of innovative changes that they considered should be implemented at the Foreign Languages Department of the Western Campus of UES to enhance the teaching and learning process of English pronunciation. One important aspect is that 87% of Seminar II students suggested that the English pronunciation subject matter should be divided into at least two courses, just the 2% said that no changes are needed in the future (Graph I-9 below).

Returning to the answers given by fifth-year students to a general question, illustrated in Graph I-8 above, 39 students, equivalent to 86% of the population, said that changes must be implemented from an intermediate to a major degree and 46% admitted the need of more drastic changes, from fairly higher to major. Not accidentally, this figure matches the 46% of Teaching Practice students that also suggested dramatic changes from fairly higher to major. On the other hand, it must be noted that just 5 students from this second population, meaning the 11%, said that changes should be implemented in a fairly lower or minor degree. Grossly,

half of both populations suggested the highest degree changes; however, when they were given the opportunity to express more in-depth their concerns or suggestions, only 15 out of 45 students (two thirds) wrote suggestions, most of which are very valuable and in tune with pronunciation experts' opinions or findings, already given in the technical literature.

Most of these fabulous suggestions are brief, even phrasal, yet conceptually incisive or acute. Most of the assertive suggestions come from students that suggested changes from intermediate to fairly higher. In fact only suggestion corresponding to correlative numbers 6 and 11 (Table I-4) have not been considered conceptually or pragmatically relevant. Only suggestions without quotation marks have been rephrased or grouped for space reasons. Students' suggestions in bold agree with at least two teachers' opinions compiled from the respective interviews (Appendix F). Suggestions in italics also match concepts and tips given by English pronunciation teaching-and-learning experts (see 2.10).

These suggestions have been grouped in five basic domain categories (Table I-4, last column), which are students' responsibility, teachers' responsibility, teacher-students' responsibility, Institutional responsibility, and teacher-institution responsibility. Pragmatically, for the particular populations under analysis, the institutional responsibility has historically escaped teachers' control because it has been constrained by external limitations, like an insufficient budget assigned to the university from the central government or like an inequitable internal budget assignation or division into the several departments and campuses.

In relation to the Teacher-students' responsibility domain, teachers foremost roll is to show students the path to follow and monitor them, which quantitatively is the smallest part, though qualitatively a demanding duty.

The only critique regarding Seminar II students' suggestions is that most did not take advantage to contribute when it was their turn to do it, though they had previously voted for changes to be implemented for the teaching and learning of English pronunciation be improved. For example, only 6 out of 15 students suggesting fairly higher changes and only 5 out 18 students suggesting intermediate changes gave their specific opinions, which would mean only 40% and 28% of the corresponding categories, respectively; figures that represent low rates for uppermost categories suggesting higher degree changes or innovation.

Table I-4. Suggestions given by Seminar II students regarding improvement of teaching and learning		
Correlative suggestion	Student's suggestion	Responsability Domain
1	1. "Ss should put more effort"	Students' responsibility
2	1. "More listening activities"	Teachers' responsibility
3	2. " <i>Big part of the lessons must have a pronunciation section</i> "	
4	3. "More audiovisual materials"	
5	4. "Create practices online"	
6	5. Make Ss transcribe paragraphs so as not to face serious problems ahead	
7	1. "Create Ss awareness through motivating teachers"	Teacher-students' responsibility
8	2. "Practice pronunc. with different methods, such as songs and movies"	
9	3. "More use of ICT tools to help Ss improve their pronunciation"	
10	1. "Less Ss in pronunciation classes"	Institutional responsibility
11	2. "Implement personalized courses or workshops"	
12	1. <i>Change English program to take Pronunciation I and II (3 Ss.)</i>	Teacher-institution responsibility
13	2. " <i>Prono subjects should not teach too much theory, just practice!</i> "	

Source: Questionnaire-survey addressed to Seminar II students, UES Nov 2017

In comparison with what has been said about the last table and graph for fifth-year students taking Seminar II, 19 out of 50 students of Teaching Practice II (fourth-year Ss.) wrote suggestions regarding changes for pronunciation improvement, meaning that 38% of this second population gave their opinions, 5% more than the former.

Despite these percentages, all the students' suggestions from both populations are considered genuine because they were unaffected by related multiple choice questions, contained ahead in the questionnaire-survey passed.

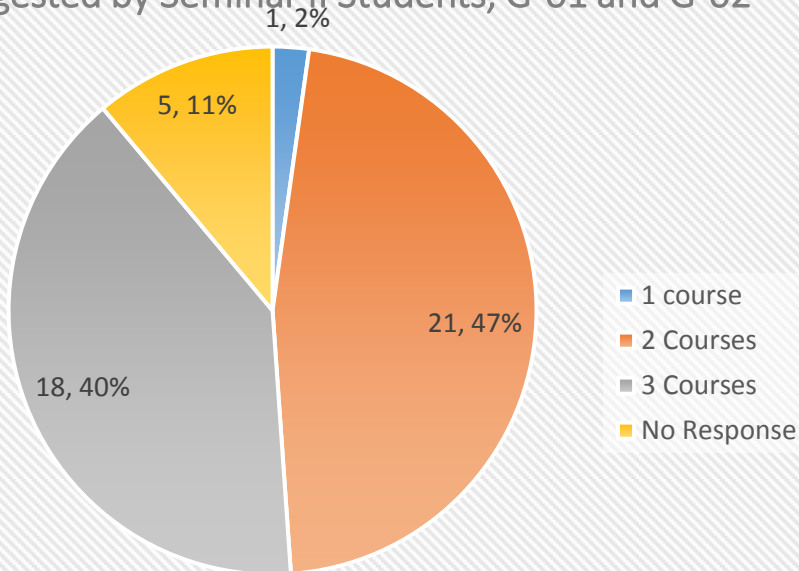
Nearly two thirds from these 19 suggestions, aimed to either more quality and quantity of pronunciation practice or more English exposure by means of more pronunciation courses, either isolated or applied. In fact, 9 students suggested a more innovative or resourcefully-varied practice of pronunciation, which should include correction, even after oral tests. One student even suggested personal feedback, which is apparently impossible given the large groups. However, there might be options (see recommendations). Related to pronunciation and regarding conversational courses, around 40% of students, including both populations, reported having not been corrected enough in Readings and Conversations I and II. In contrast, only 26 percent of both populations, designated these reading-and-conversation courses as the second-most pronunciation correcting subject matters along the major (Fig I-11)

Regarding the need of more pronunciation courses, one student, claiming that one pronunciation subject was not enough, suggested to include pronunciation in "the English levels," meaning the five consecutive intensive English courses corresponding to the Bachelor's degree, taught from first to fifth semester of the major. Also, 8 of the suggestions fell into the category of "a consequence of very large groups." Example of this opinions were "more time for students to talk or for teachers to correct pronunciation".

A suggestion that powerfully called the team's attention was that "some teachers are not interested in practicing pronunciation, and they should," which deserves to be taken into account, since it might reflect an attitude issue that is at hand to solve.

It is time of more specific details on changes with which all students agreed when asked by means of multiple choice questions. When it comes to the preferable number of pronunciation courses, the winning categories with 47% and 40% of Seminar II students' preferences were two and three courses to be taught, respectively. Similarly, the favorite category for Teaching Practice II was two courses with 48% of students.

Graph I-9 Number of Pronunciation Courses Suggested by Seminar II Students, G-01 and G-02



SOURCE: Questionnaire Survey addressed to Seminar II Students, UES Nov 17

When asked about the number of hours a week (4, 6, or 8) that students would prefer for pronunciation courses, the two most voted alternatives were 6 and 8 hours with 47% and 24% of seminar II students' will, accordingly. Also, in the Teaching Practice II class, 6 and 8 hours a week were the first two selected categories with 30% and 28% of the students, correspondingly.

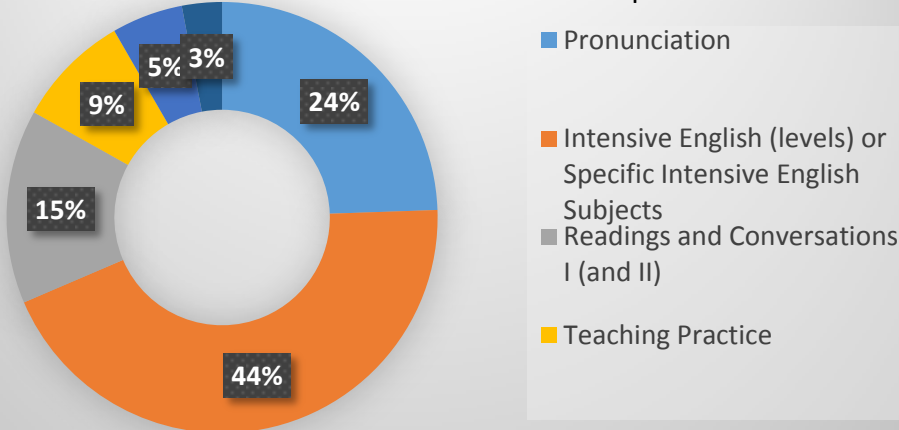
Additionally, 55.5% of Seminar II and 48% of teaching Practice II affirmed that, instead of pronunciation courses taught in an isolated way, they would prefer an applied pronunciation instruction, which would be part of other courses, either intensive or conversational, or both.

Related to pronunciation correction, Figure I-10 displays the subjects or subject areas where students considered having been corrected the most for pronunciation, through the major. Figure I-11 shows the subject(s) that students reported as the second-most pronunciation correcting along the major. In the former figure, intensive English levels are the winners according to 44% of the students' opinions, while for the latter one, two teaching-

learning areas technically match in score, with 24% and 26%, for the Intensive English levels and Readings and Conversations subjects, respectively. No doubt that most of pronunciation correcting work is done through the five intensive English levels, from Basic, through Intermediate I and II, to Advanced I and II. However, Readings and Conversations subjects were expected to advance to the second category place, but they did not.

Fig I-10 Subject Matter or Subject Area where Ss of Seminar II and Teaching Practice II Were Pronunciation-Corrected the Most, along the Major

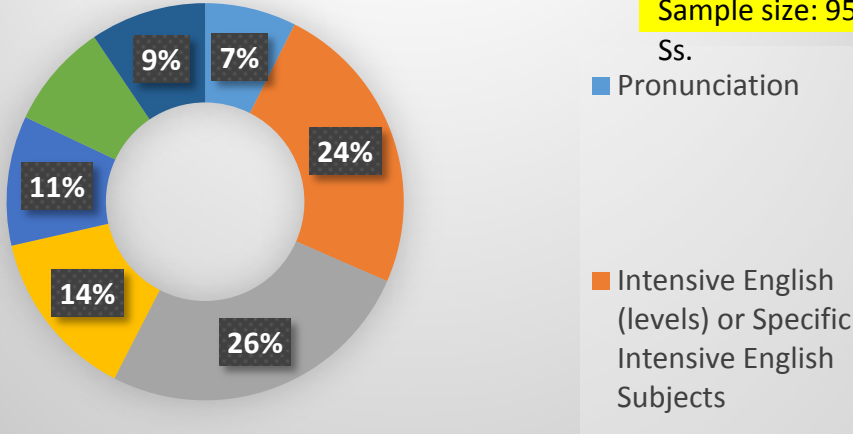
Sample size: 95 Ss.



SOURCE: Questionnaire Survey addressed to Students of Seminar II and Teaching Practice II, UES Nov. 17

Fig I-11 Second Most Pronunciation-Correcting Subject Matter or Subject Area for Ss of Seminar II and Teaching Practice II , along the Major

Sample size: 95 Ss.



SOURCE: Questionnaire Survey addressed to Students of Seminar II and Teaching Practice II, UES Nov. 17

Both 2017-class populations have much in common. However, what has distinguished Seminar II from Teaching Practice II students has been the higher percentage of response absence for the latter. This lacking does not necessarily mean unwillingness but more likely honesty in not knowing the right answer. Exception being made for answers to question 8, Part IV of the survey (Graph I-6), all the information reported by both students' populations has been judge genuine in the light of triangulation of distinct sources and data cross-checking of equal sources, already exemplified in this appendix.

I-11 Most relevant Environmental Data for Three Generations

The following last tables compare the 2017 class with the 2016 class. Yellow-colored cells (italics) of the same row compare well while blue ones (bold) differ.

Table I-5 Quantitative information gathered from two annual classes of fifth year students and one annual class of fourth year students according to data reported

Question(s)	Statistical Information			
	Category	Class data Statistics		T. PRACTICE II 2017 (50 Ss.)
		SEMINAR II 2017 (45 Ss.)	SEMINAR I 2016 (44 Ss.)	
Number of spoken English exposure hours a week	Class Mean	47.4	37.3	33.7
	St. Dev.	27.6	20.9	23.3
	Recomm. Range	75.0- 102.5	58.0 - 79.0	57.0 - 80.3
Number of pronunciation words looked up in dictionary during 3rd year	Class Mean	<u>7.8</u>	<u>8.5</u>	6.9
	St. Dev.	4.7	5.1	5.0
	Recomm. Range	13.5 - 19.5	13.5 - 19.0	11.9 - 16.8
Number of pronunciation-corrected words by	Class Mean	<u>7.2</u>	<u>6.6</u>	5.7
	St. Dev.	5.3	5.4	3.3

Question(s)	Statistical Information			
	Category	Class data Statistics		T. PRACTICE II 2017 (50 Ss.)
		SEMINAR II 2017 (45 Ss.)	SEMINAR I 2016 (44 Ss.)	
teacher(s) during 3rd year	Recomm. Range	12.0 - 17.5	12.0 - 17.5	8.3 - 11.6
Number of pronunciation- corrected words by teacher(s) during 4th year	Class Mean	<u>3.8</u>	<u>4.1</u>	3.3
	St. Dev.	2.4	3.3	1.6
	Recomm. Range	6.0 - 8.5	7.5 - 10.5	4.6 - 6.2
Number of pre-presentation rehearsals done by students Semesters IV-VII	Class Mean	2.2	X	3.4
	St. Dev.	0.9		1.8
	Recomm. Range	3.0 - 4.0		4.4 - 6.3
Number of already-known pronunciation words looked up in dictionary during 3rd year	Class Mean	<u>7.4</u>	X	4.5
	St. Dev.	4.3		3.8
	Recomm. Range	11.7 - 15.9		9.3 - 12.1
Source: Questionnaire-surveys addressed to Seminar II and Teaching Practice Ss (Nov 2017) and to Seminar I Ss (May 2016), according to third, fifth, and fourth columns, respectively ; UES				

Table I-6a Qualitative information gathered from two annual classes of fifth year students according to data reported

Information obtained from yes/no questions	Class data Statistics		
	SEMINAR II 2017 (45 Ss.)	SEMINAR I 2016 (44 Ss.)	T. PRACTICE II 2017 (50 Ss.)
Ss that implemented pronunciation-aimed, pre-presentation rehearsals in 3rd year	84.4%	54.5%	84.0%
Ss who thought having gotten corrected enough for	66.7%	29.5%	62.0%

Information obtained from yes/no questions	Class data Statistics		
	SEMINAR II 2017 (45 Ss.)	SEMINAR I 2016 (44 Ss.)	T. PRACTICE II 2017 (50 Ss.)
pronunciation by teachers in 3rd year			
Ss that used dictionary for pronunciation purposes in 3rd year	100.0%	79.5%	96.0%
Ss who also used the dictionary to look up already-known-pronunciation words	55.6%	59.1%	80.0%
Ss who still get corrected enough for pronunciation in 4th/5th year	88.9%	31.8%	92.0%
Ss who still use dictionary for pronunciation purposes in 4th/5th year	75.6%	88.6%	74.0%
Source: Questionnaire-surveys addressed to Seminar II and Teaching Practice II Ss (Nov 2017) and to Seminar I Ss (May 2016), according to second, fourth, and third columns, respectively ; UES			

Table I-6b Qualitative information gathered from two annual classes of fifth year students according to data reported

Information obtained from open questions	Class Data Statistics		
	SEMINAR II 2017 (45 Ss.)	SEMINAR I 2016 (44 Ss.)	T. PRACTICE II 2017 (50 Ss.)
Ss who said how many already-known-pronunciation words they searched for their last presentation	66.7%	X	42.0%
Ss who specified or listed examples of already-known-pronunciation words searched for their last	48.9%	X	66.0%

presentation			
Ss who numbered already-known-pronunciation words searched for their last presentation	64.4%		74.0%
Ss who wrote phonetic symbols of already-known-pronunciation words searched for their last presentation	13.3%		6.0%
Source: Questionnaire-surveys addressed to Seminar II and Teaching Practice II Ss (Nov 2017) and to Seminar I Ss (May 2016), according to second, fourth, and third columns, respectively ; UES			

Appendix J: Words Reported as Pronunciation Troublesome by Students

Table J-1 Example of Words in whose phonemes Students Commit Pronunciation Errors as observed by Peers in Seminar II

Number	Word Spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conso n.	ə	ə	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ə	aɪ	oʊ
1	<i>something</i>	4	'sʌm.θɪŋ	ʌ, ɪ	ŋ			ɪ		ʌ									
2	necessary	1	'nes.ə.ser.i	e										e					
3	<i>think</i>	5	θɪŋk	ɪ	θ, ŋ, k			ɪ											
4	(e)speak(ing)	3	'spi:kɪŋ	e', ɪ	ŋ			ɪ					e'						
5	because	1	bɪ'ka:z, bɪ'kəz	ɪ, ɑ	z			ɪ				ɑ							
6	language	1	'læŋ.gwɪdʒ	æ, ɪ	ŋ			ɪ		æ									
7	<i>focus</i>	2	'foʊ.kəs	ə		ə													
8	regard	1	rɪ'gɑ:rd	ɪ	d			ɪ											
9	money	1	'mʌn.i	ʌ, i					ʌ										
10	capable	1	'keɪ.pə.bəl	ə, ə		ə	ə												
11	honesty	1	'ɑ:nə.sti	'ɑ:, ə.		ə					ɑ								
12	<i>could</i>	1	kʊd, kəd	ʊ, ə				ʊ											
13	<i>appreciate</i>	1	ə'pri:ʃi.ert	ə		ə													
14	graduation	1	.grædʒ.u'eɪ.jən	æ, ə			ə			æ									

Number	Word Spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conson.	ə	ɒ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ə	ai	ou
15	watch	1	wɑ:tʃ	ɑ								ɑ							
16	wear	1	wɛr, weə	ə		ə													
17	attention	1	ə'ten.ʃn	ə		ə	ɒ												
18	studied	1	'stʌdɪd	ɪ	d			ɪ											
19	students	1	'stu:dnt	ɒ	d, t		ɒ												
20	worked	1	wɜ:kt	ɜ:	w											ɜ			
21	research	1	'ri:sɜ:tʃ, rɪ'sɜ:tʃ	ɜ												ɜ			
22	multidisciplinary	1	,mʌl.tɪ'dɪs.ə.plɪ.ner.i	ɪ, ɪ, e				ɪ						e					
23	live	1	lɪv	ɪ				ɪ											
24	hit	1	hɪt	ɪ				ɪ											
25	paradigm	1	'pɛr.ə.daim	e										e					
26	question	3	'kwes.tʃn	ə	tʃ	ə													
27	operationalization	1	,ɑ:.pə'reɪ.ʃn.əl'aɪ'zeɪʃn	ɑ:, ɒ, ɒ, ai,		ə	ɒ											ai	
28	audiovisual	1	ɑ:.di.əvɪʒ.u.əl	ɔ, ʊ, ɪ,	ʒ	ə		ɪ				ɔ						ʊ	
29	motivation	1	,mɒv.ɪ'teɪ.ʃn	ʊ, ɒ														ʊ	
30	development	1	dɪ'vel.əp.mənt	ɪ', ə, ə	t	ə		ɪ											

Number	Word Spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conson.	ə	ɒ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ə	aɪ	oʊ
31	<i>variety</i>	1	və'raɪ.ə.t̩i	ə, ə		ə													
32	chapter	1	'tʃæp.t̩ə	æ, ə						æ							ə		
33	<i>oral</i>	1	'ɔ:r.əl	'ɔ:							ɔ								
34	<i>presentations</i>	1	ˌprez.ən'teɪ.ʃən	ə, ə	z		ə												
35	<i>conversation</i>	1	ˌkɔ:n.vɜ'seɪ.ʃən	ɑ, ə, ə			ə			ɑ							ə		
36	<i>vary</i>	2	'ver.i	e									e						
37	project	1	'prɔ:dʒekt	e	t								e						
38	strategy	1	'stræt̩.dʒi	æ, ə		ə				æ									
39	again	1	ə'gen	ə		ə													
40	<i>Regular-verb- past-tense-ending pronunciation</i>			ɪ				ɪ											
Note: Words in Italics (blue or sky-blue) represent everyday words or academically common words				Total per vowel sound		13	7	13	1	2	4	4	2	1	5	2	2	1	2
				Occurrence frequency of vowel sounds in words		32.5%	17.5%	32.5%	2.5%	5.0%	10.0%	10.0%	5.0%	2.5%	12.5%	5.0%	5.0%	5.0%	2.5%

Source: Questionnaire-Survey addressed to Seminar II students UES 2017 (Q26 - Part I). 24 out of 45 students gave word examples

(53.3% of Ss.)

Note: super index schwa ə represents eluded schwa and e' is the adopted convention for the epenthetic vowel, which is erroneously added before an initial "s" word by Hispanics learners of English

Table J-2 Example of Words in whose phonemes Students Commit Pronunciation Errors as observed by Peers in T.

Practice II

Number	Word spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conson.	ə	ʊ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ə	aɪ	oo
1	<i>develop</i>	4	dɪ' vel. əp	ɪ, ə		ə		ɪ											
2	<i>television</i>	5	' tel. ə. vɪʒ. ən	ə, ɪ, ʊ	ʒ	ə		ɪ											
3	<i>past</i>	3	pæst	æ							æ								
4	<i>parents</i>	2	' per. ənts	e, ʊ			ʊ						e						
5	<i>first</i>	3	' fɜ:st											ɜ					
6	<i>identify</i>	2	ar' den. tə. faɪ	ə		ə													
7	<i>gesture</i>	1	' dʒes. tʃə	ə													ə		
8	<i>suggestion</i>	1	sə' dʒes. tʃən	ə, ʊ		ə	ʊ												
9	<i>reliable</i>	1	rɪ' laɪ. ə. bəl	ɪ			ʊ	ɪ											
10	<i>structure</i>	2	' strʌk. tʃə	ə														ə	
11	<i>think</i>	3	θɪŋk	ɪ	θ, ŋ, K			ɪ											
12	<i>thing</i>	1	θɪŋ	ɪ	ŋ			ɪ											
13	<i>methodology</i>	1	meθ. ə' da: .lə. dʒi	ə, ə	θ	ə													
14	<i>practitioner</i>	1	præk' tɪf. ən. ə	æ, ɪ, ʊ, ə			ʊ	ɪ			æ							ə	
15	<i>something</i>	1	' sʌm. θɪŋ	ʌ, ɪ	ŋ					ʌ									
16	<i>accura(tely, cy)</i>	3	' æk. jə. ətli	'æ, ə		ə					æ								
17	<i>comfortable</i>	1	' kʌm. fə. tə. bəl	ʌ, ə						ʌ								ə	

Number	Word spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conson.	ə	ʌ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ə	aɪ	oʊ
18	<u>to</u> day	1	tə'deɪ	ə	w	ə													
19	re <u>se</u> arch	1	'ri:sə:tʃ, rɪ'sɜ:tʃ	ɜ															
20	multidisciplinary	1	,mʌl.ti'dɪs.ə.plɪ.ner.i	ɪ, ɪ, e				ɪ						e					
21	l <u>i</u> ve	1	lɪv	ɪ				ɪ											
22	h <u>i</u> t	1	hɪt	ɪ				ɪ											
23	parad <u>i</u> gm	1	'pær.ə.dəɪm	e										e					
24	<u>qu</u> estion	8	'kwes.tʃən	ə	tʃ	ə													
25	<u>o</u> pinions	1	ə'pɪn.jən	ə, ɪ, ə		ə		ɪ											
26	can	1	kæn, kən	æ, ə									æ						
27	love	1	'lʌv	ʌ									ʌ						
28	<u>M</u> onday	4	'mʌn.deɪ	ʌ									ʌ						
29	<u>a</u> s	1	æz	æ	z								æ						
30	pub <u>l</u> ic	1	'pʌb.lɪk	ɪ									ʌ						
31	u <u>s</u> e	1	ju:z		z														
32	<u>pre</u> sentations	2	,prez.ən'teɪ.ʃən	ə, ə	z			ə											
33	th <u>o</u> ught	1	θɑ:t, θɔ:t	ɔ:	θ									ɔ					
34	<u>im</u> portant	3	ɪm'pɔ:r.tənt	ə	t			ə											
35	<u>a</u> bout	1	ə'baʊt	ə		ə													
36	<u>in</u> hibition	1	ɪn.hɪ'bɪʃ.ən	ɪ, ɪ				ɪ											

Number	Word spelling	Reporting Ss	Phonetic Transcription(s) in US English	Troublesome Segmental in Order		Troublesome Vowel Sounds Tabulated													
				Vowel(s)	Conson.	ə	ə	ɪ	ʊ	ʌ	æ	ɑ	ɔ	e'	e	ɜ	ɚ	aɪ	oʊ
37	focus	1	'foʊ.kəs	ə		ə													
38	<i>Regular-verb- past-tense-ending pronunciation</i>			ɪ				ɪ											
Note: Words in Italics (blue or sky-blue) represent everyday words or academically common words				Total per vowel sound		1	6	12	0	5	5	0	1	0	3	2	4	0	0
				Occurrence frequency of vowel sounds in words		28.9%	15.8%	31.6%	0.0%	13.2%	13.2%	0.0%	2.6%	0.0%	7.9%	5.3%	10.5%	0.0%	0.0%

Source: Questionnaire-Survey addressed to Teaching Practice II students UES 2017 (Q26 - Part I). 27 out of 50 Ss gave word examples (54% of Ss.)

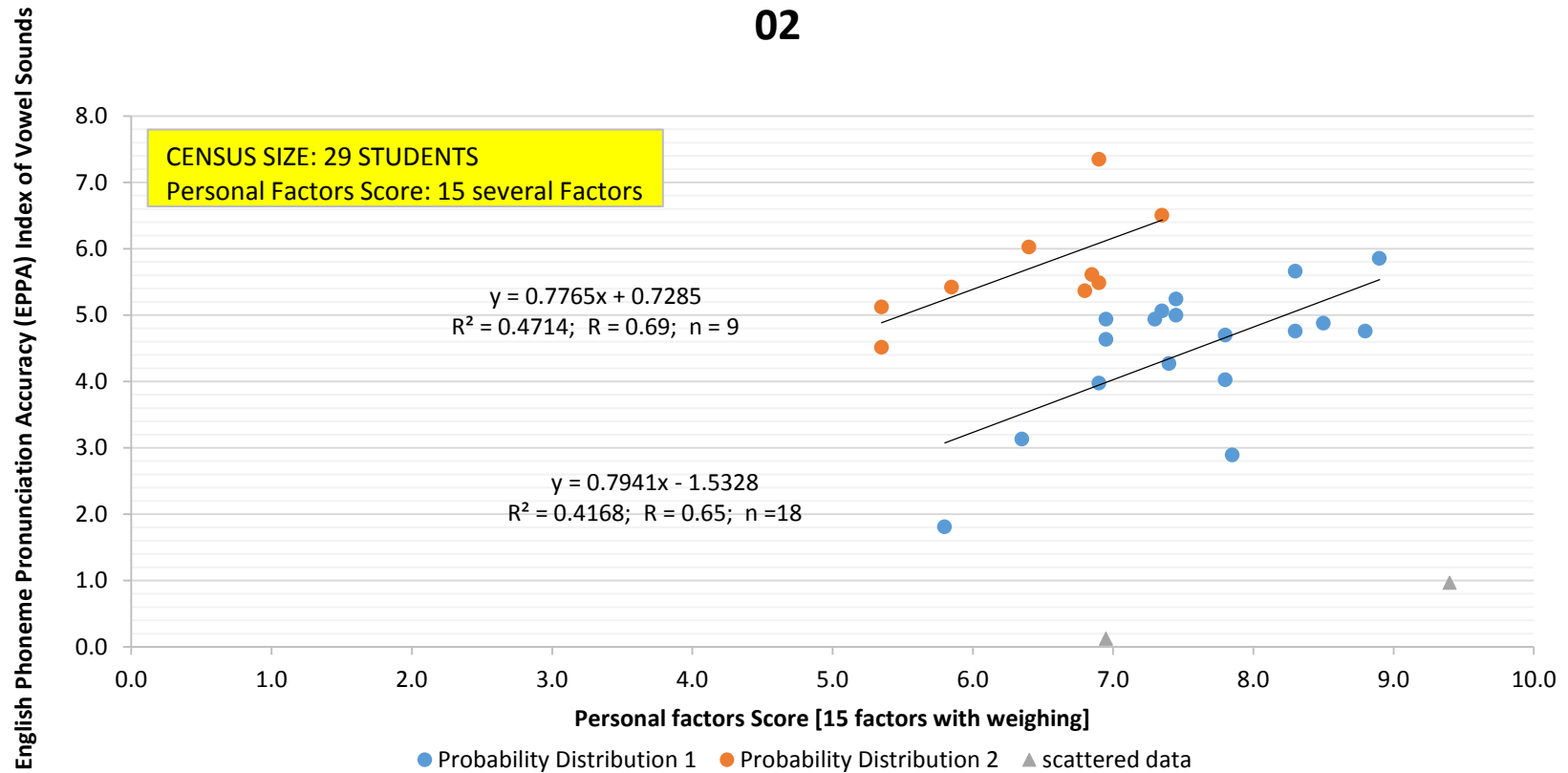
Note: super index schwa ə represents eluded schwa and e' is the adopted convention for the epenthetic vowel, which is erroneously added before an initial "s" word by Hispanics learners of English

Table J-3 Percentage of Occurrence of Vowel Sounds in Words Reported as Pronunciation-Accuracy Troublesome to produce to Ss According to Peers

Subject matter's name	Students' population size	example-word contributing Ss	Categories reported by Ss		Percent of Troublesome vowel sounds that Ss reported to have perceived as erroneously pronounced in their classmates														
			Number of words contributed	Other contributing category	ʊ	ʊ	ɪ	ʊ	ʌ	æ	ɑ	ɔ	eɪ	e	ɜ	ɔ	aɪ	oʊ	ə + ə
Seminar II	45	24	39	"ed" ending in regular verbs	32.5%	17.5%	32.5%	2.5%	5.0%	10.0%	10.0%	5.0%	2.5%	12.5%	5.0%	5.0%	2.5%	5.0%	
Teaching Practice II	50	27	37		28.9%	15.8%	31.6%	0.0%	13.2%	13.2%	0.0%	2.6%	0.0%	7.9%	5.3%	10.5%	0.0%	0.0%	44.7%
Two popultions (Sem + T. Pract.)	95	51	76	"ed" ending in regular verbs	30.6%	16.6%	32.0%	1.2%	9.3%	11.7%	4.7%	3.8%	1.2%	10.1%	5.1%	7.9%	1.2%	2.4%	47.2%
			Note(s)	}			2nd most freq.			3rd most freq.			4th most freq.	schwa-formed sounds					1st freq.
														60.3%					

Appendix K: Correlation Graphs

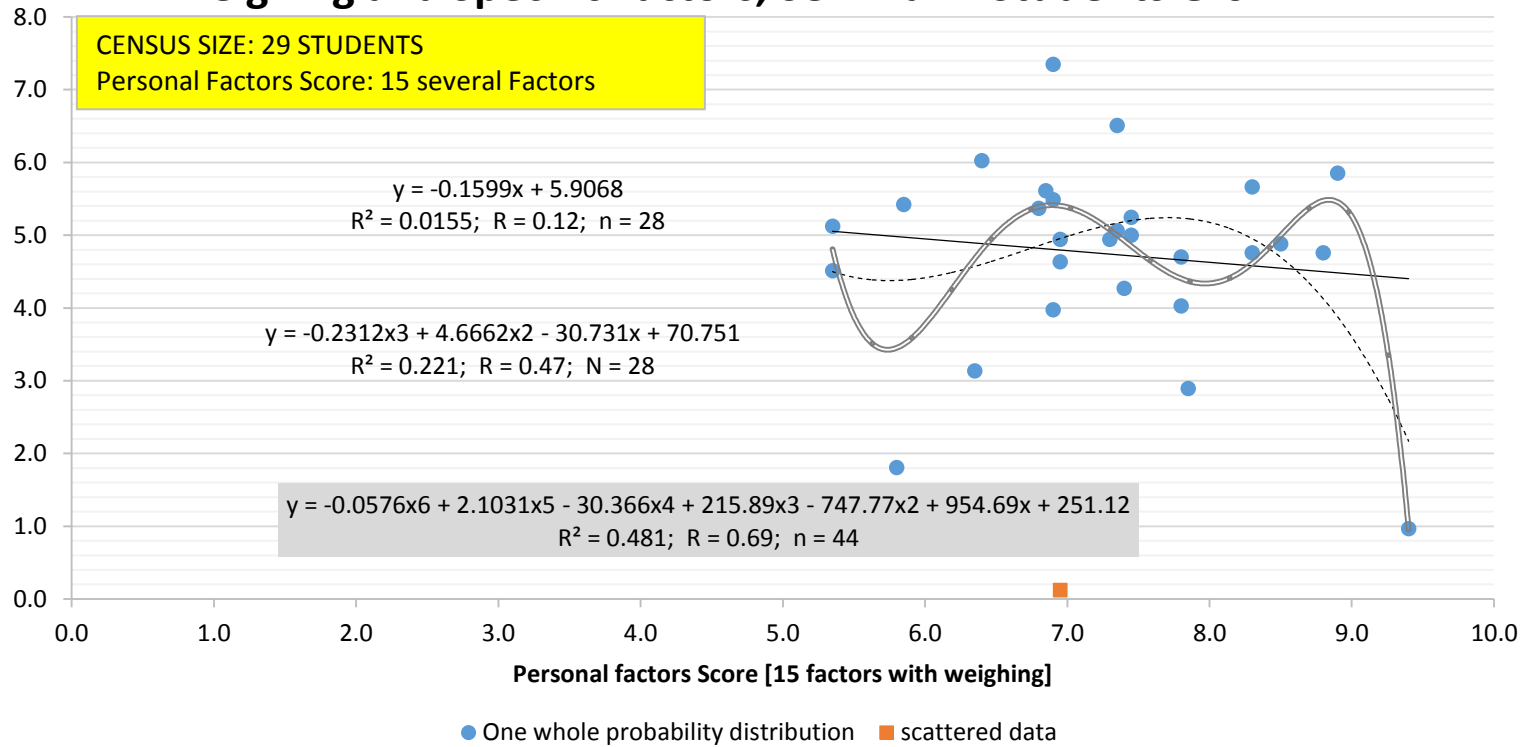
Graph 5b Linear Correlations between Personal Factors and EPPA Index of Vowel Sounds, Applying Weighing, Seminar II Students, G-02



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

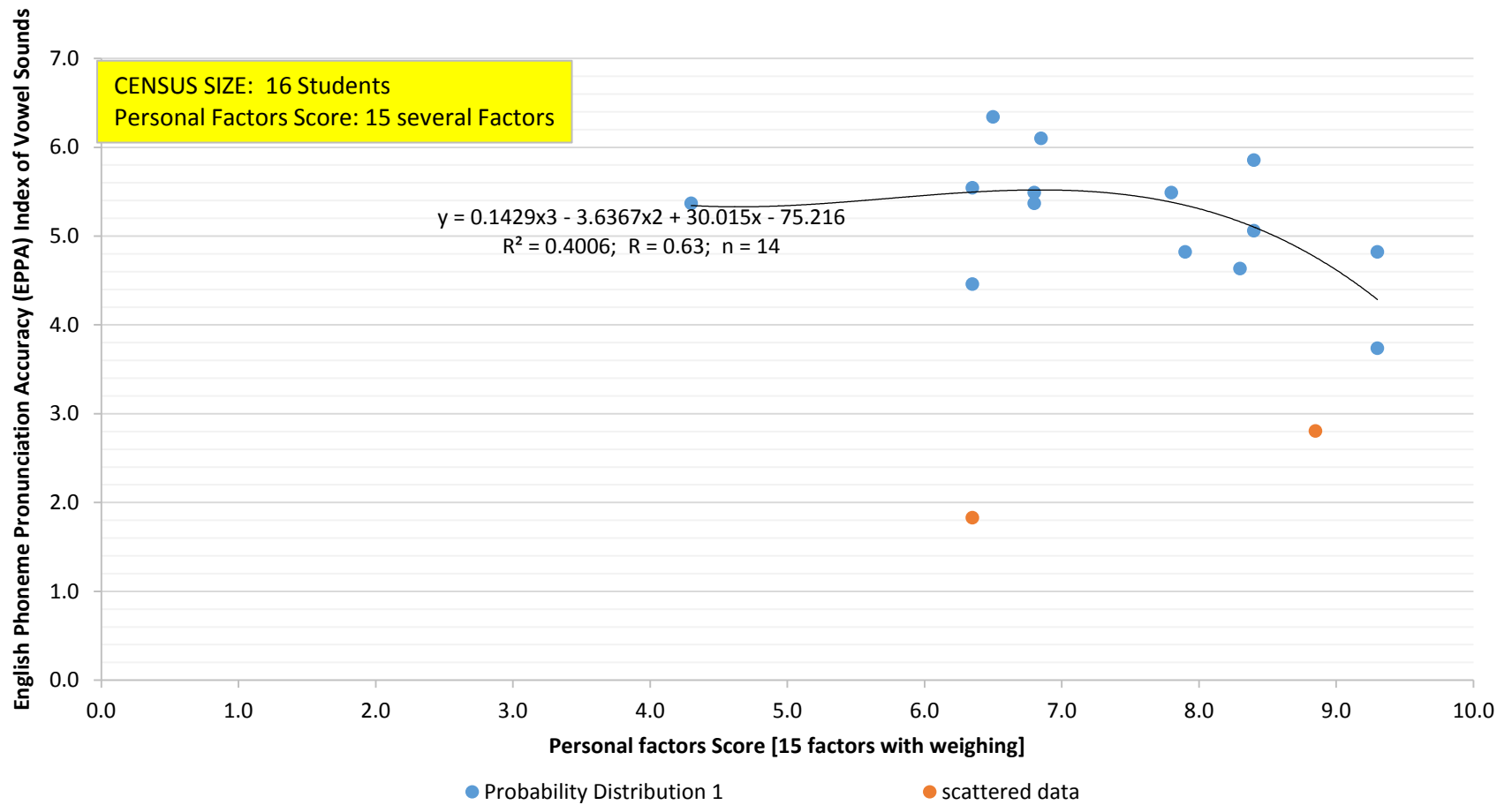
Graph 5c Linear and Nonlinear Polinomic Correlation between Personal Factors and EPPA Index of Vowel Sounds, Applying Weighing and Specific Factors, Seminar II Students G-02

English Phoneme Pronunciation Accuracy (EPPA) Index of Vowel Sounds



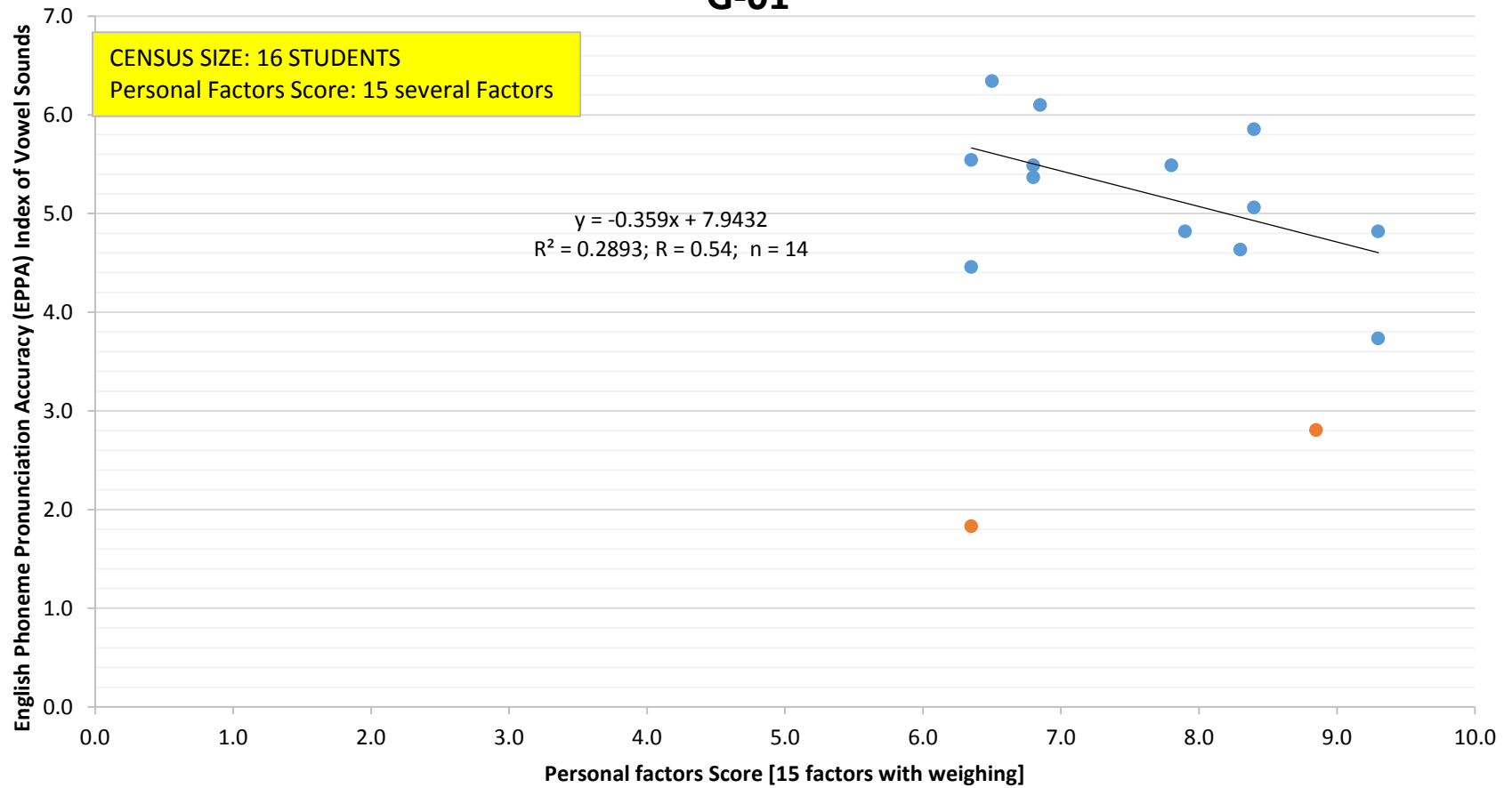
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 6a Nonlinear Correlations between Personal Factors and EPPA Index of Vowel Sounds, Applying Weighing, Seminar II Students, G-01



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

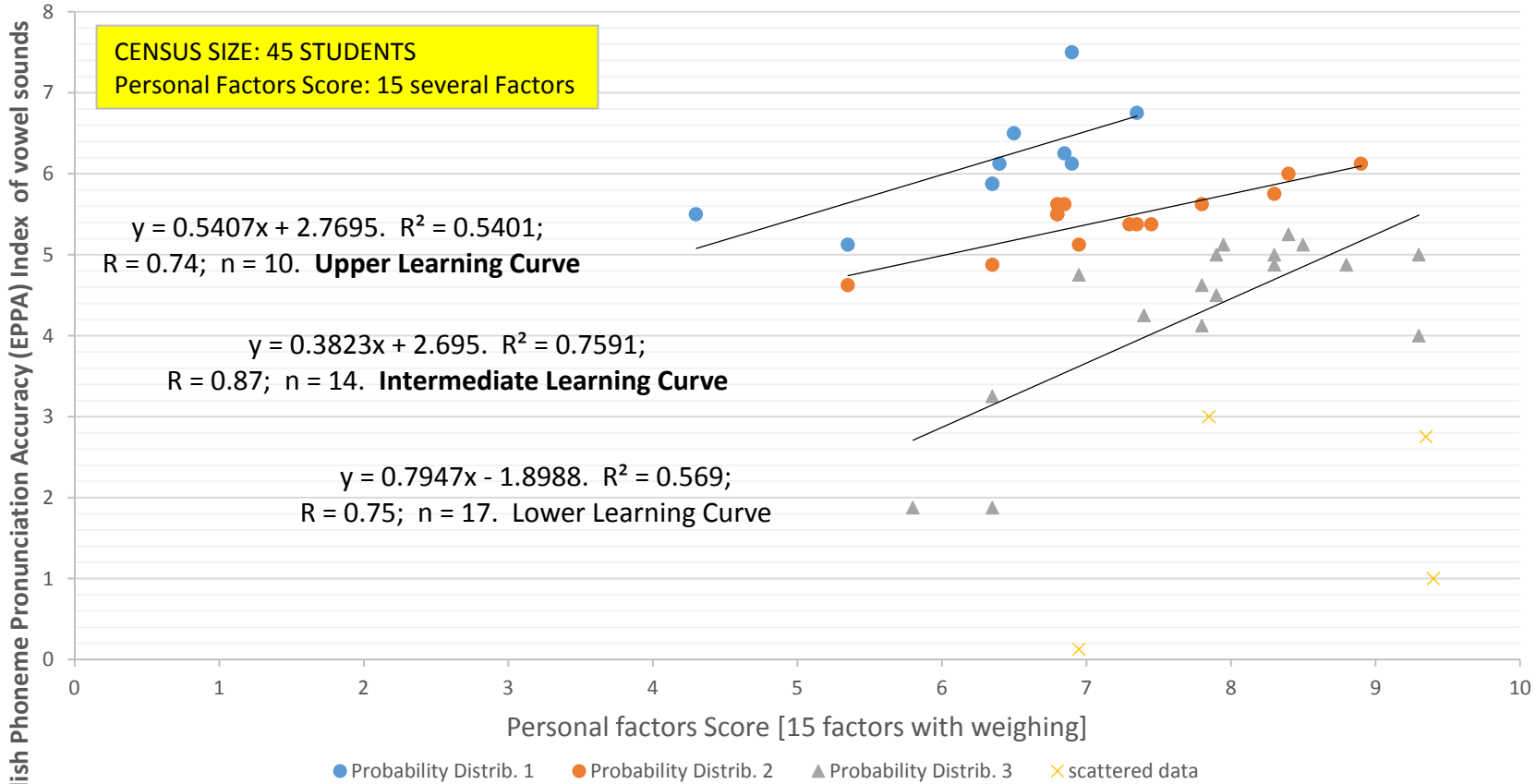
Graph 6b Linear Correlations between Personal Factors and EPPA Index of Vowel Sounds, Applying Weighing, Seminar II Students G-01



● Probability Distribution 1 ● scattered data — Lineal (Probability Distribution 1)

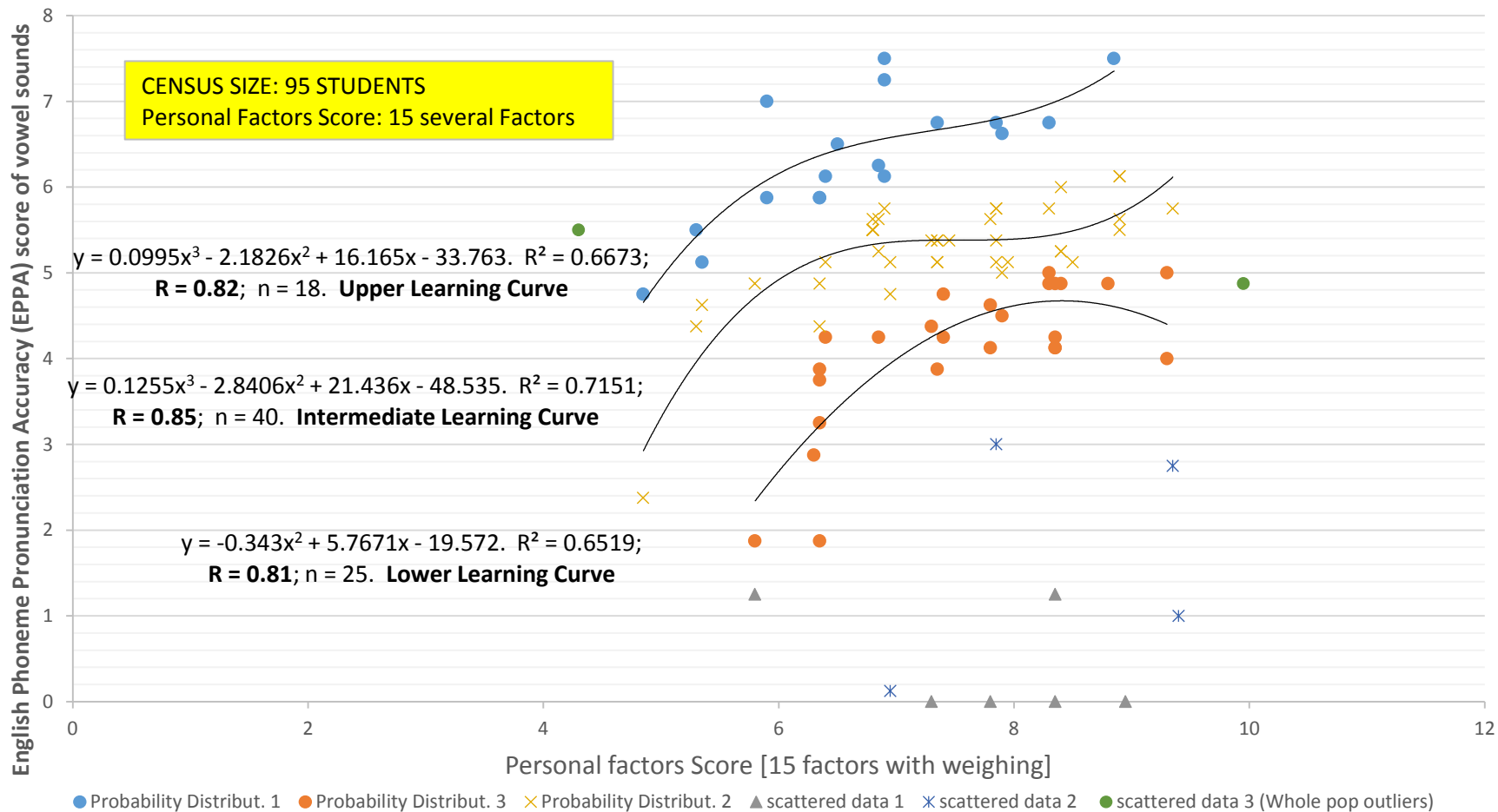
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 7b. Linear Correlations between Personal Factors and EPPA at vowel sounds, Applying Weighing. "Seminar II" CLASS GROUPS 01, 02.



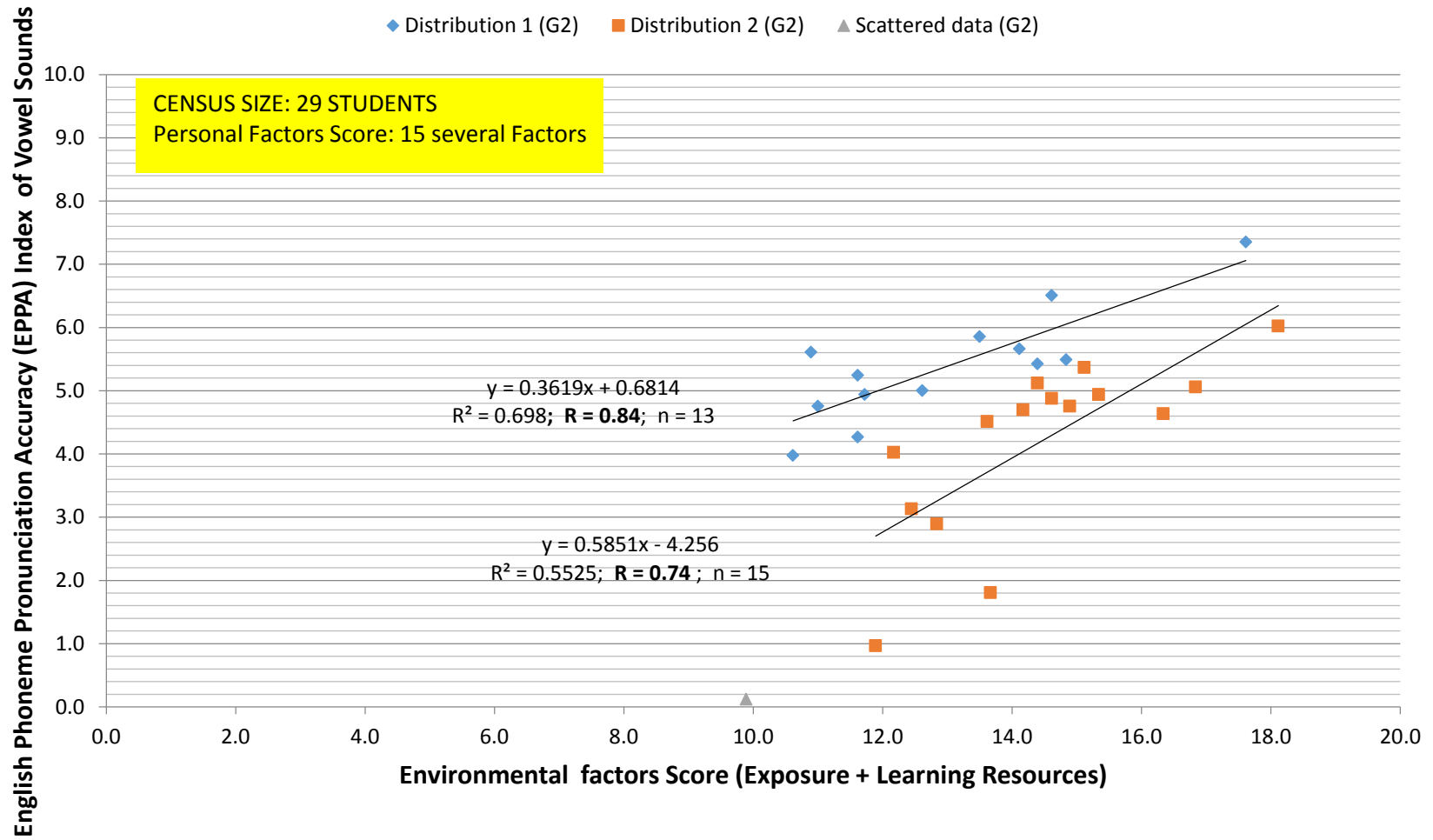
SOURCE: Questionnaire-Survey Seminar II students. Nov. 2017

**Graph 7d Linear Correlations between Personal Factors and EPPA at vowel sounds.
Seminar II and Teaching Practice II Populations.**



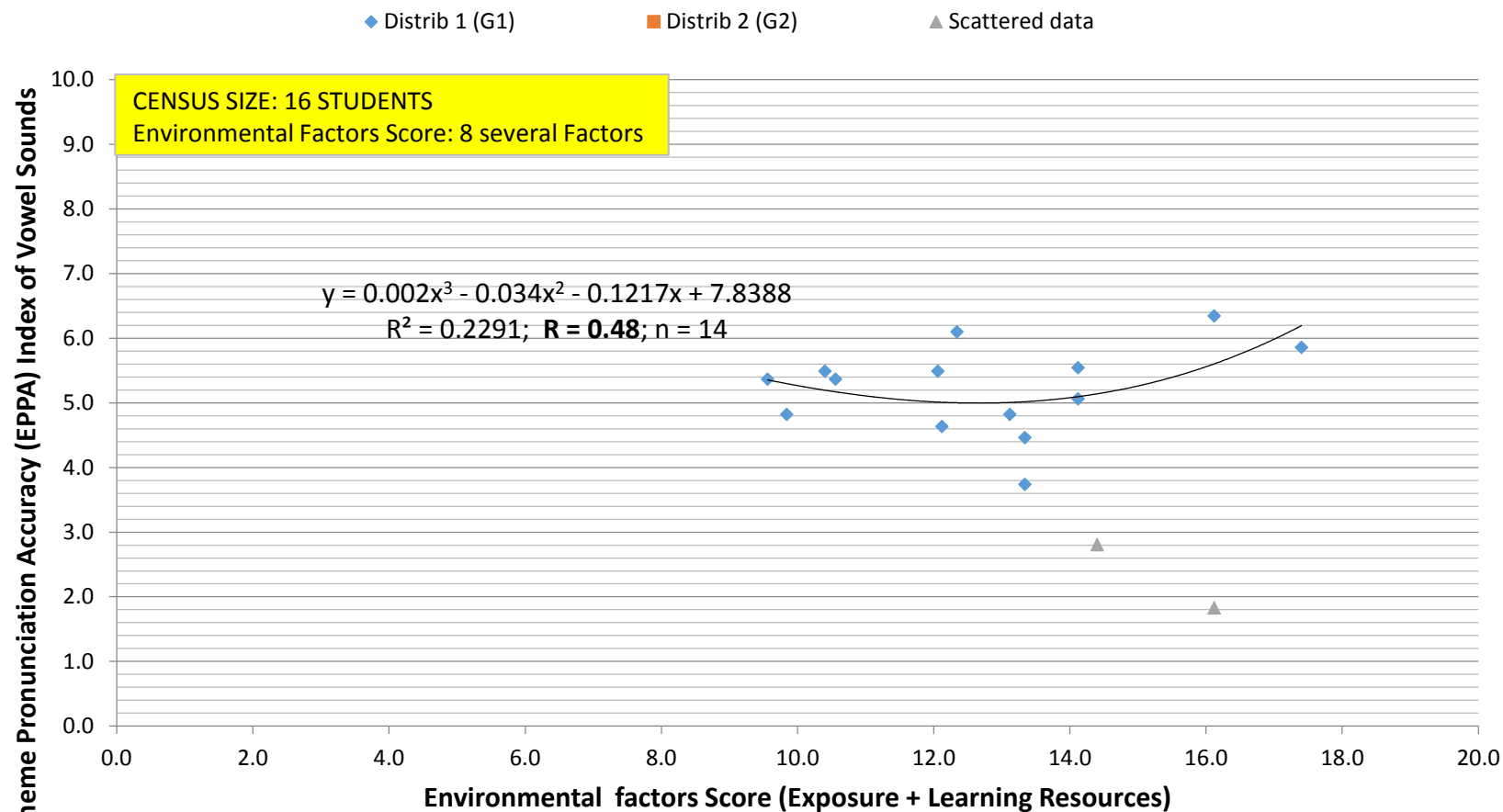
SOURCE: Questionnaire-Survey to Seminar II and Teaching Practice II students. Nov. 2017

Graph 9b Linear Correlations between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-02



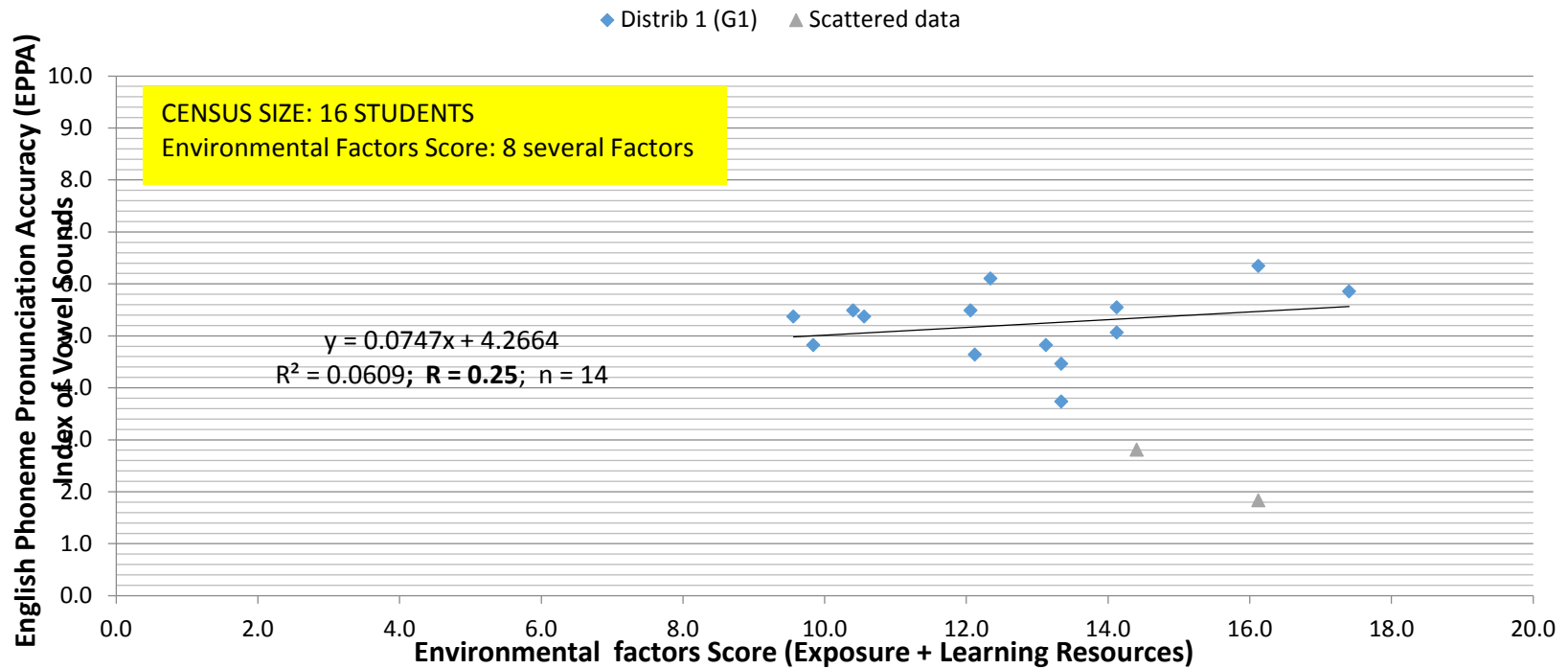
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 10a Nonlinear Correlations between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01



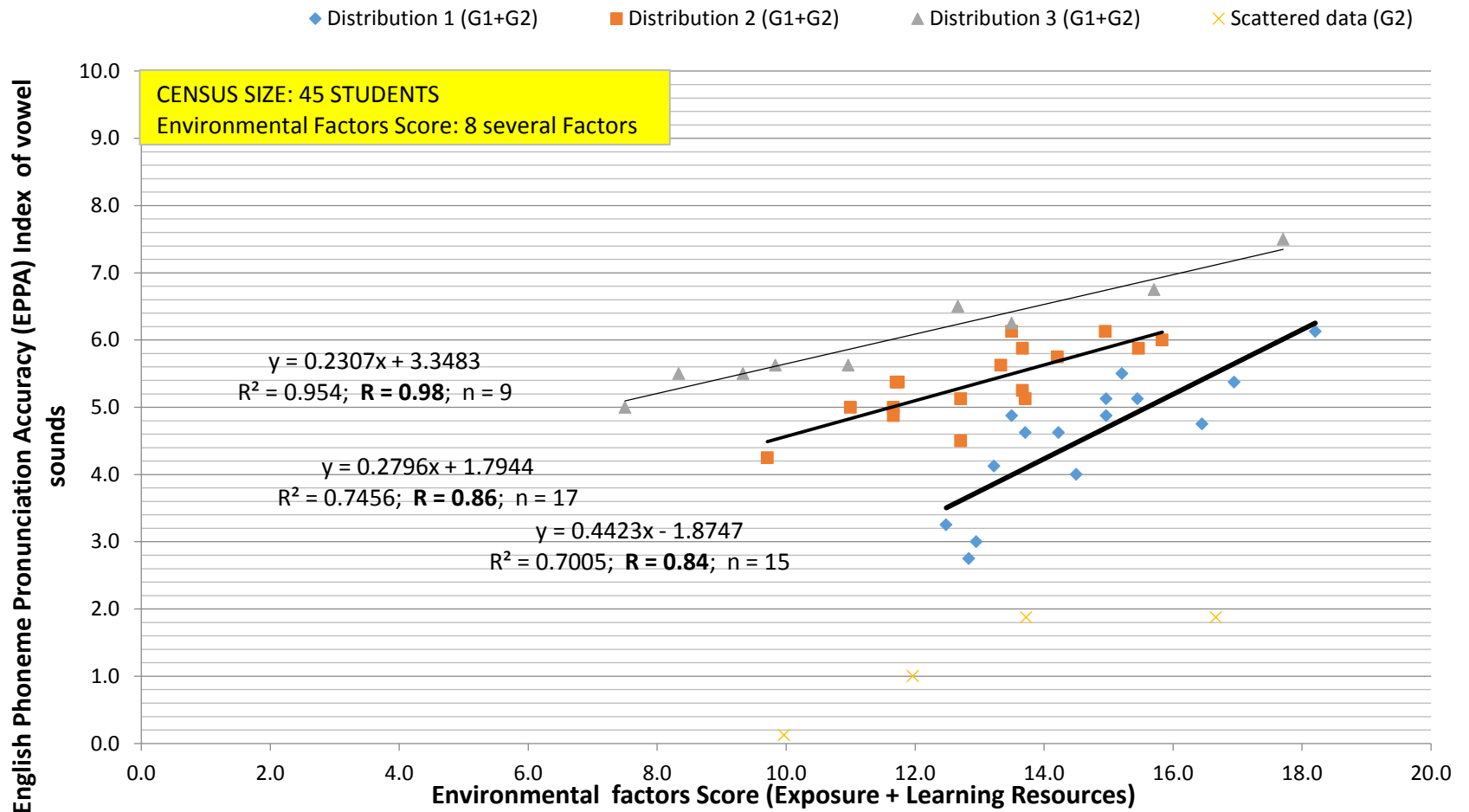
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 10b Linear Correlations between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01



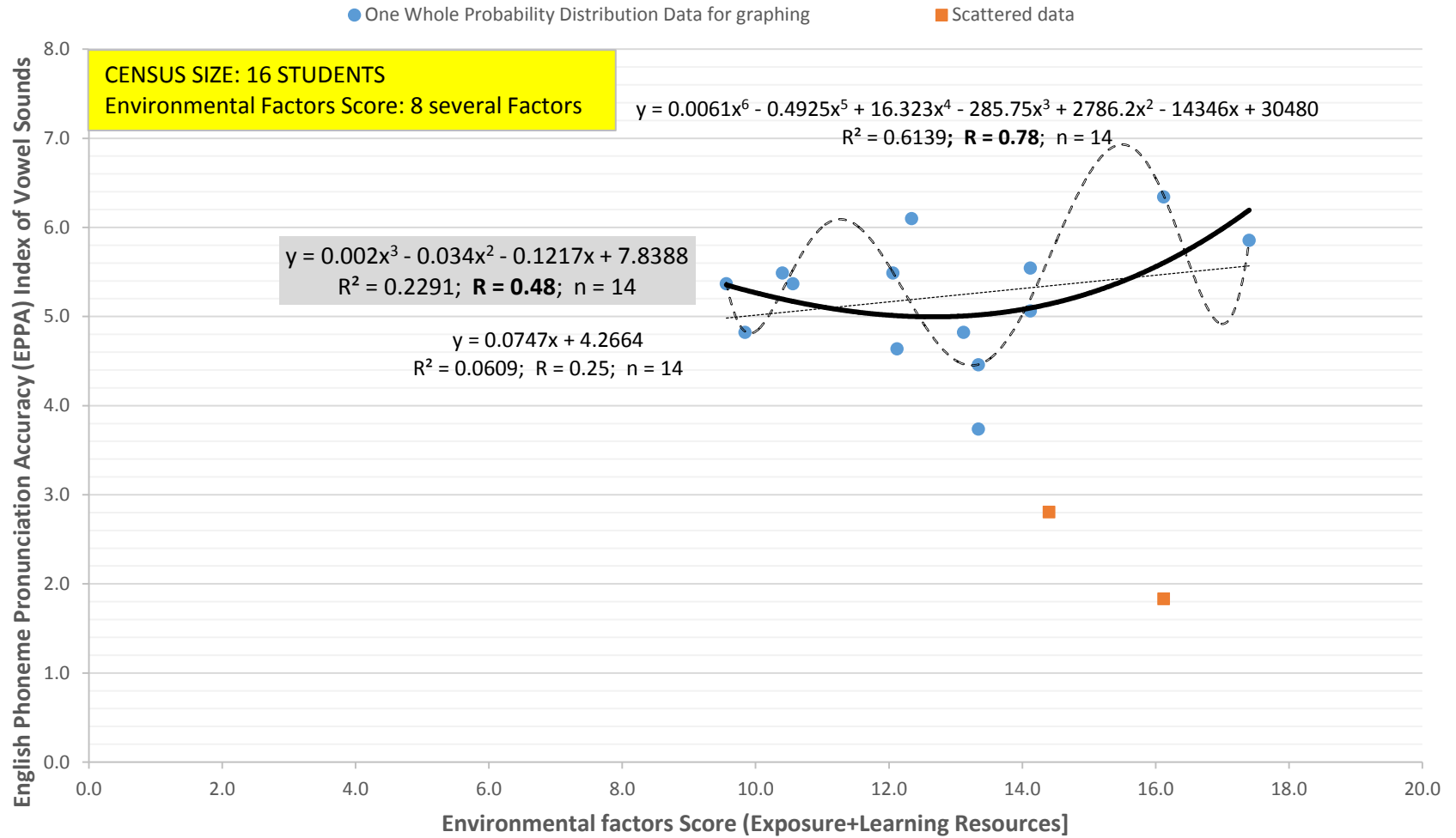
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 11b Linear Correlations between Environmental Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUPS 01, 02.



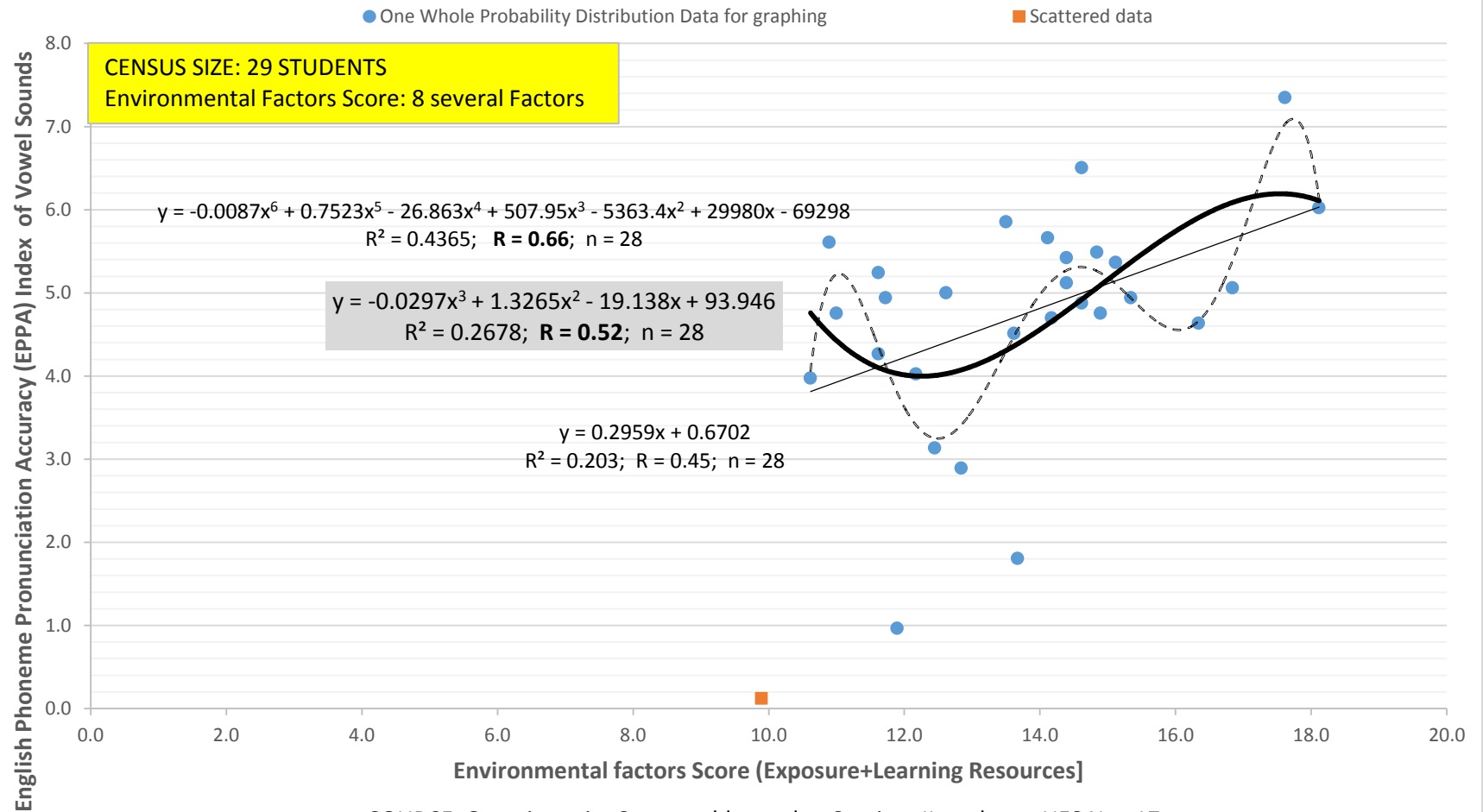
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 12 Linear Correlation between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01



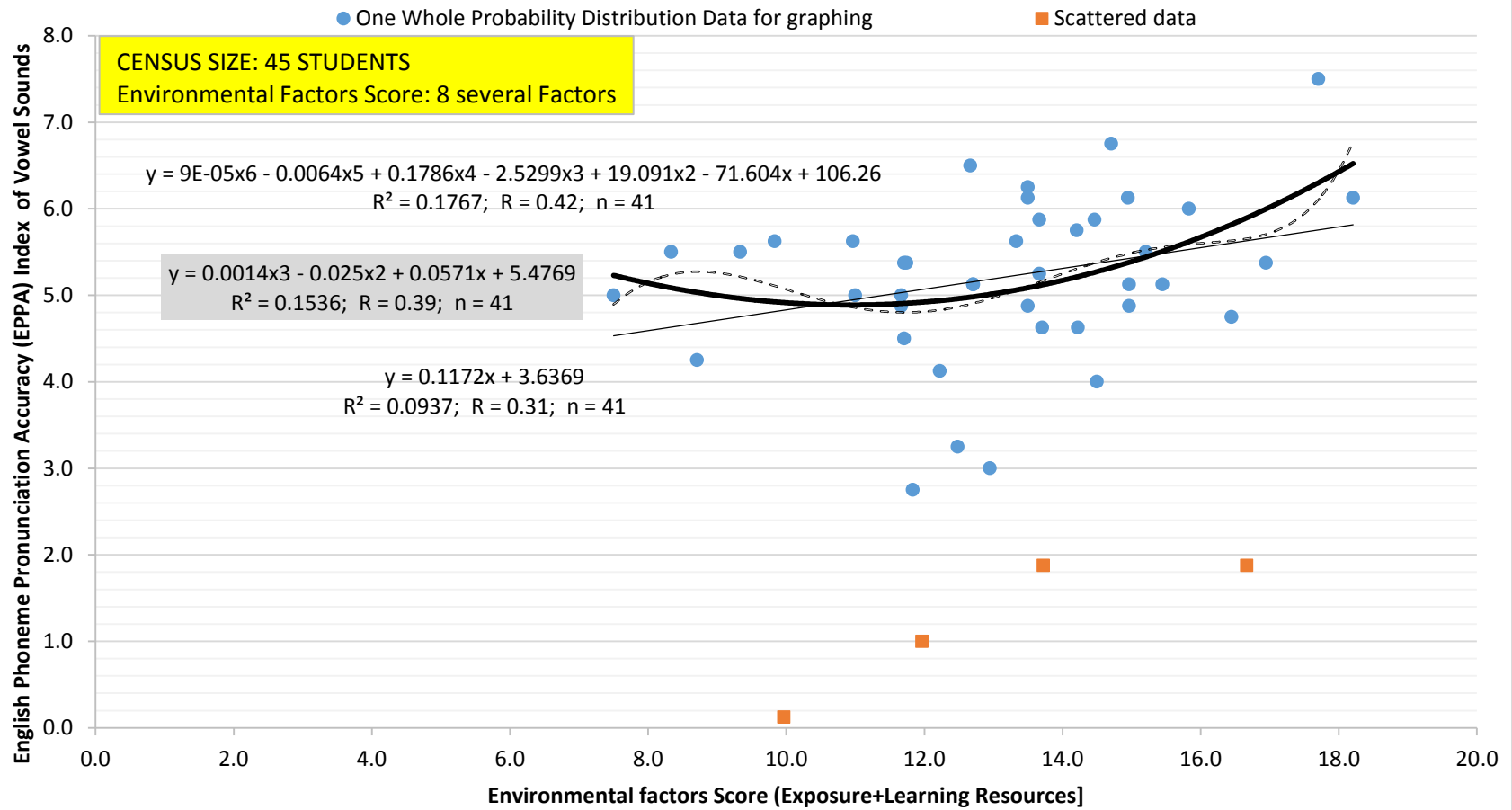
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 13 Linear Correlation between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-02



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

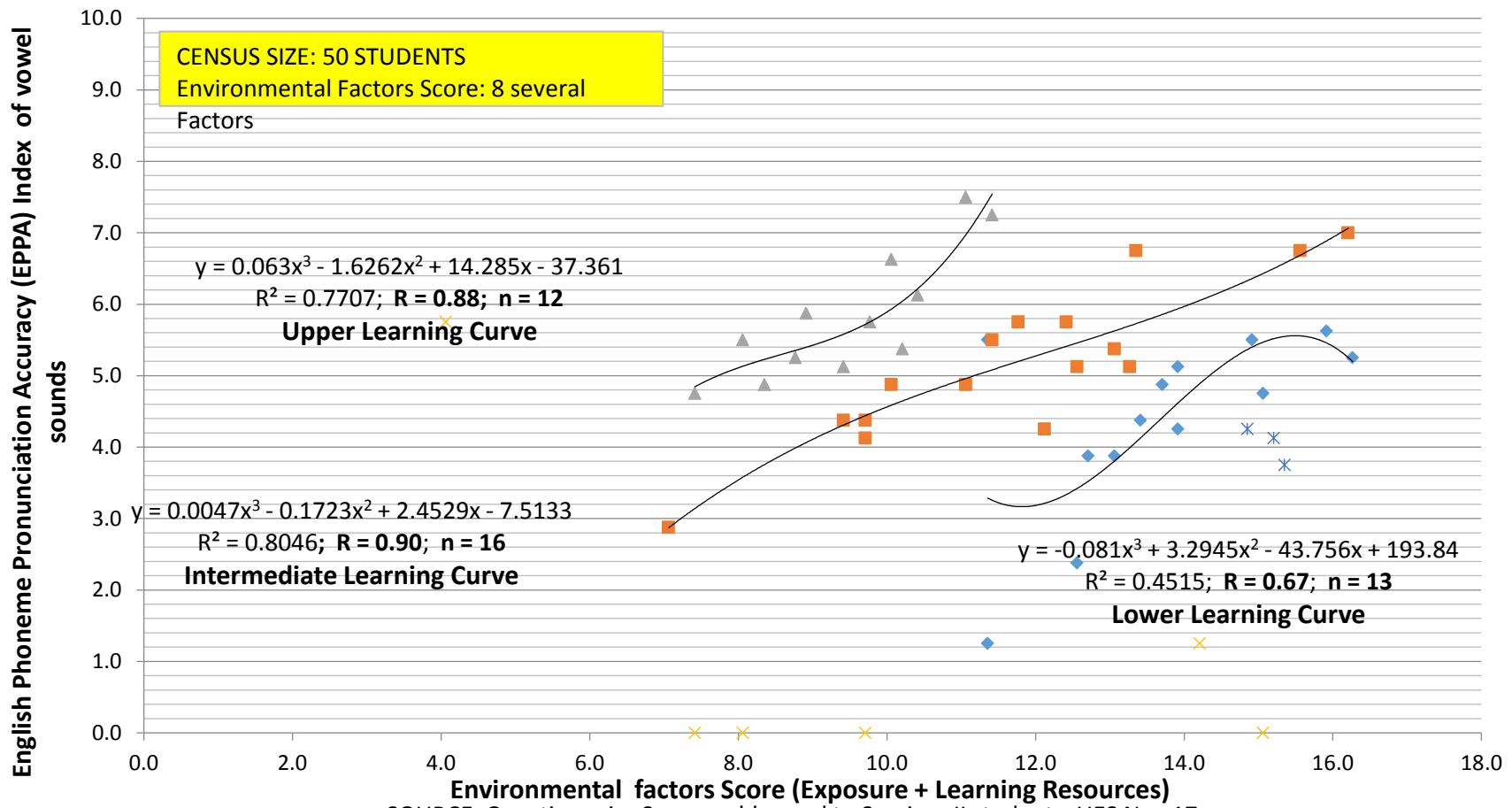
Graph 14 Linear Correlation between Environmental Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01 and G-02



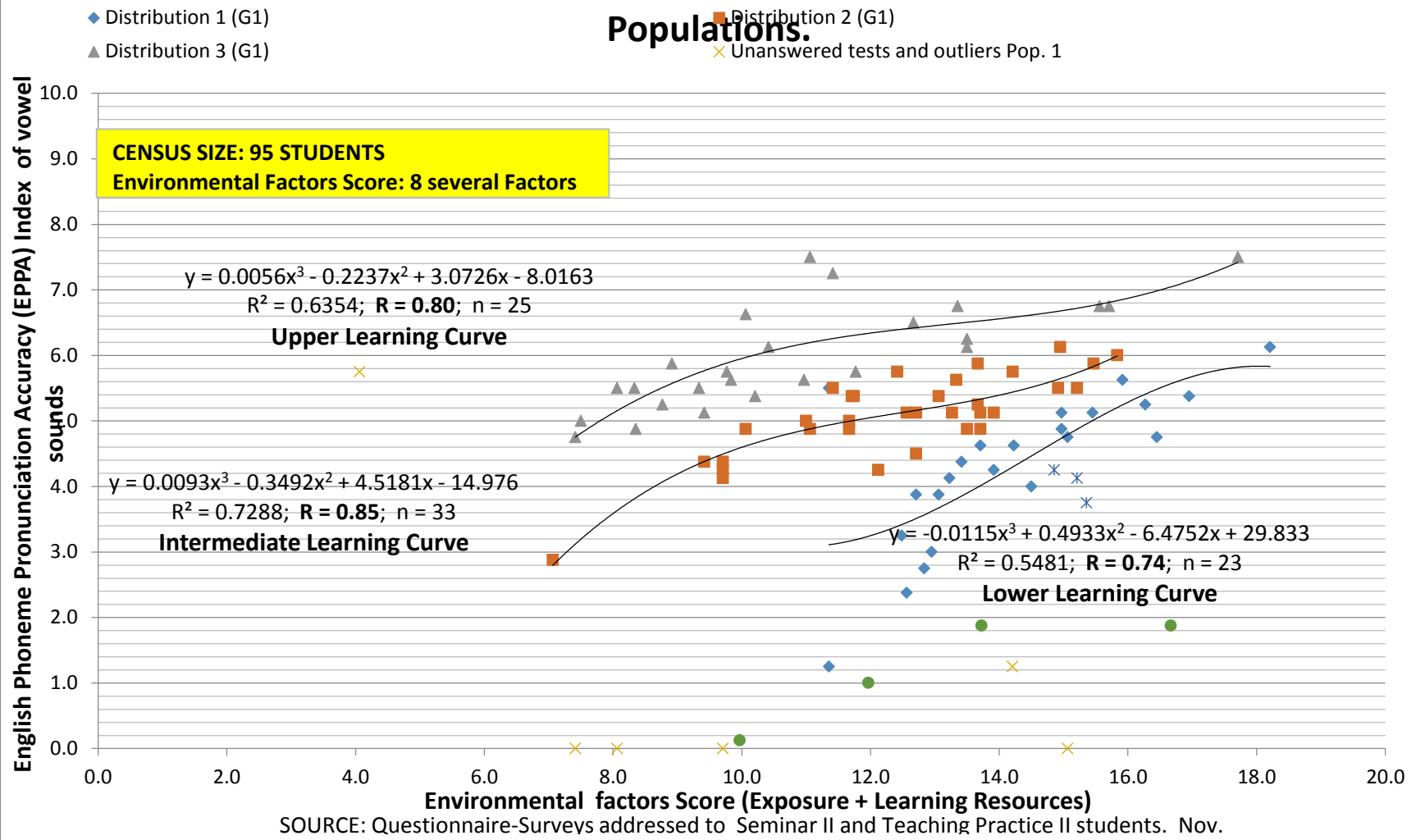
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 15 Nonlinear Correlations between Environmental Factors and EPPA at vowel sounds. "Teaching Practice II" CLASS GROUPS 01.

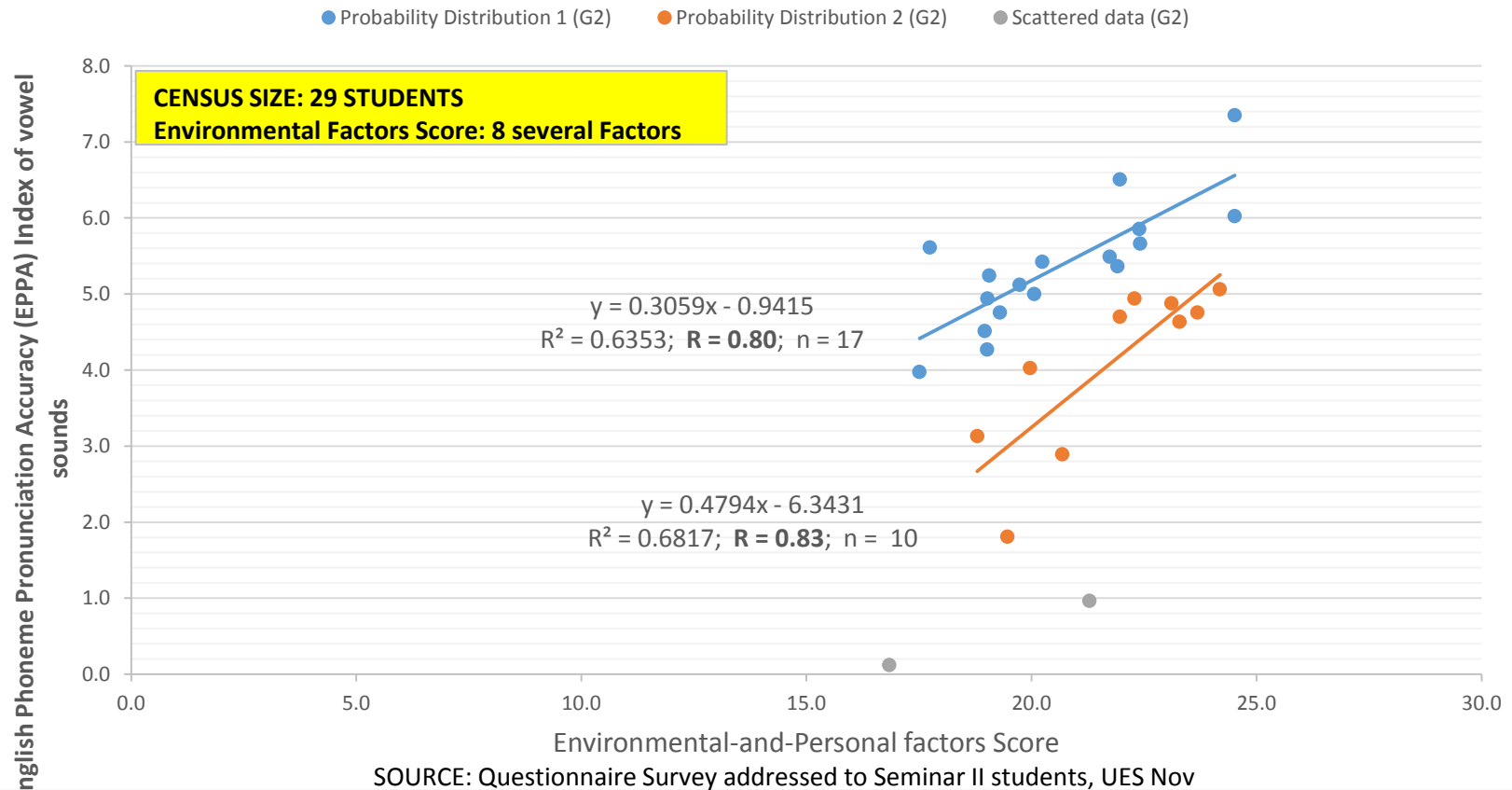
◆ Distribution 1 (G1) ■ Distribution 2 (G1) ▲ Distribution 3 (G1) ✕ Unanswered tests and outliers ✕ Scattered data (extensively uncomplete tests)



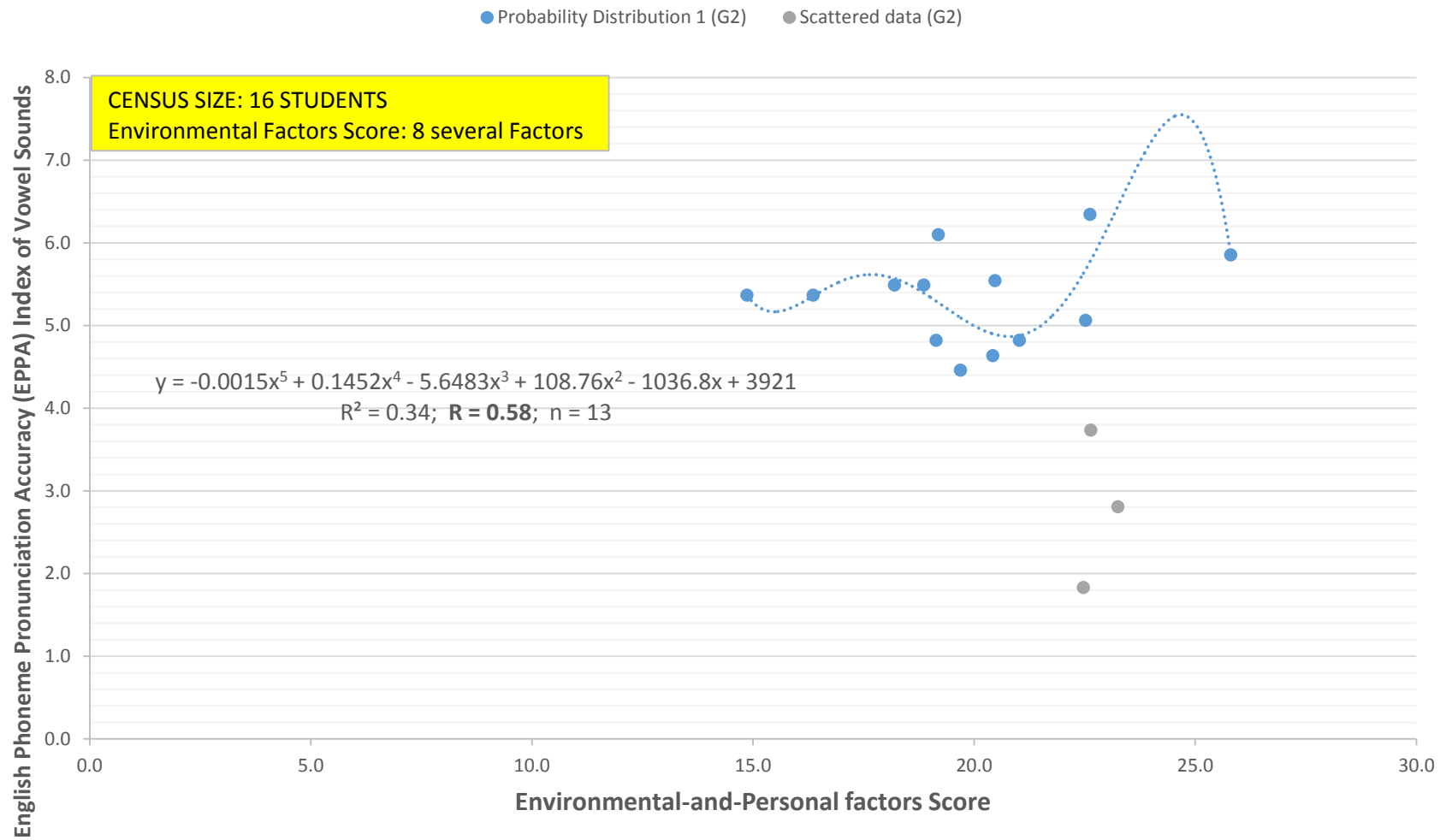
Graph 16 Nonlinear Correlations between Environmental Factors and EPPA at Vowel Sounds. Teaching Practice II and Seminar II



Graph 17b Linear Correlation between Environmental-Personal Factors and EPPA at vowel sounds. "Seminar II" CLASS GROUP 02. Afternoon hours

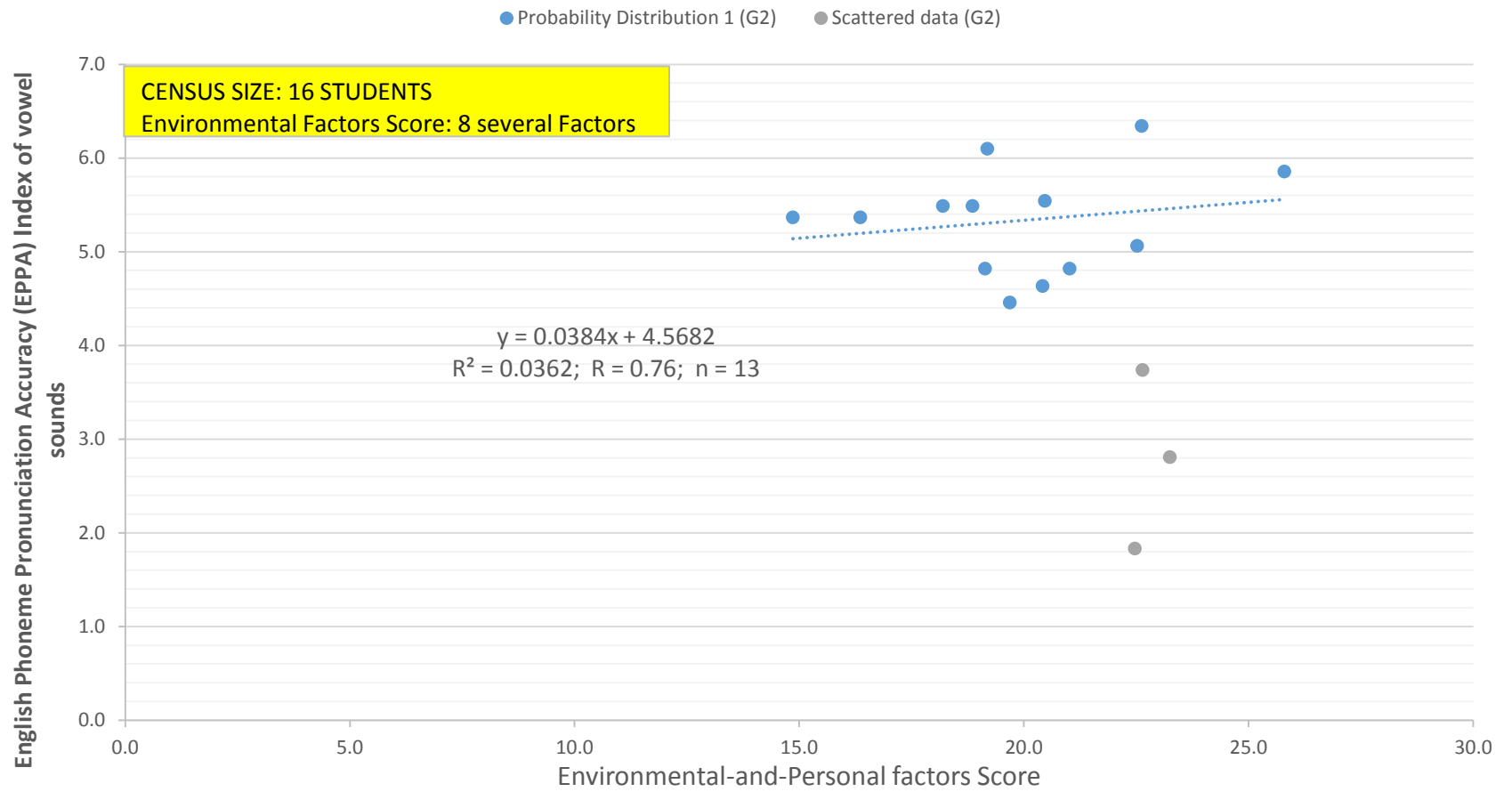


Graph 18a Non-linear Correlation between Environmental-Personal Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01



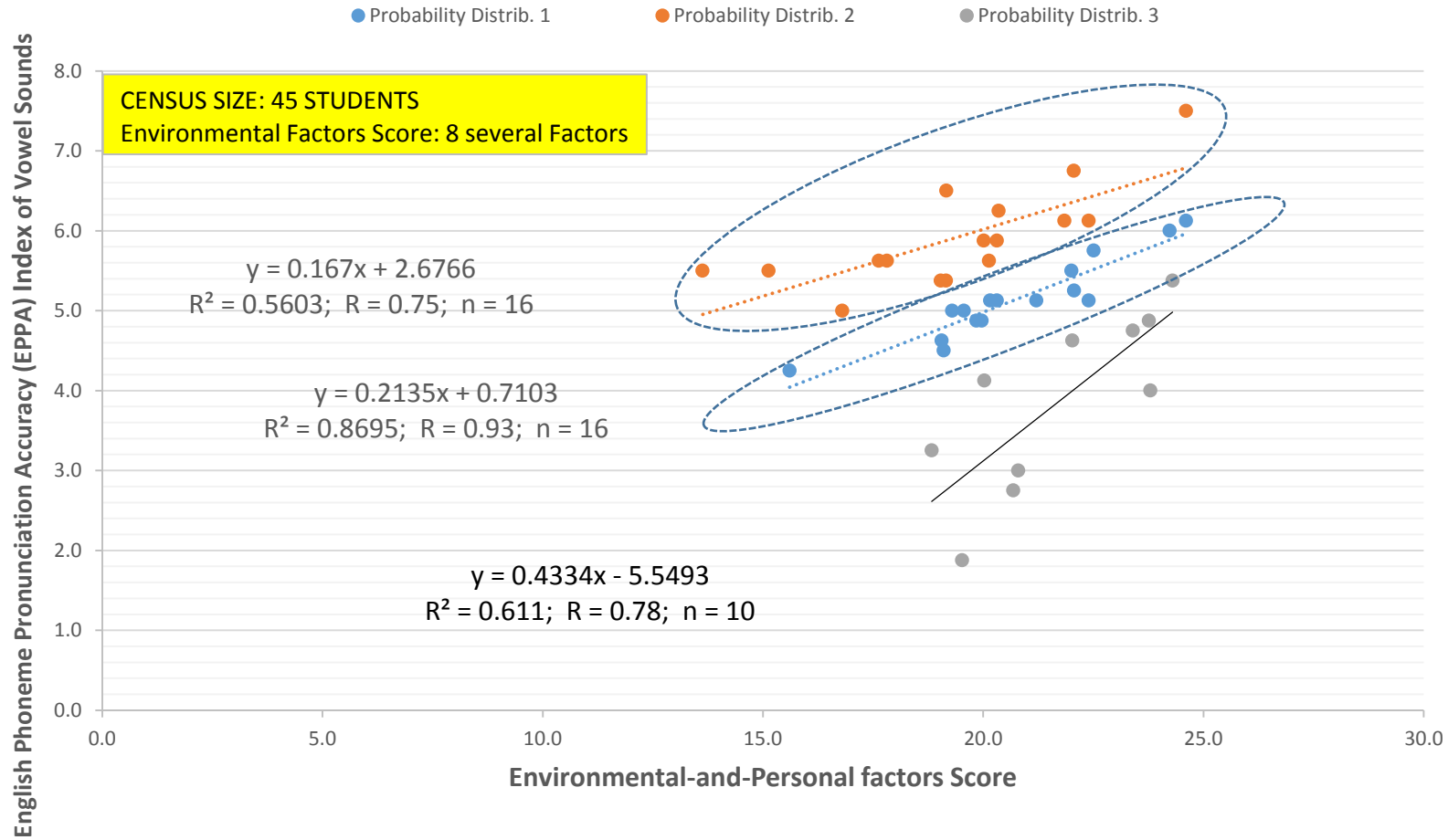
SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 18b Linear Correlation between Environmental-Personal Factors and EPPA at Vowel Sounds, Seminar II Students, G-01



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Graph 19b Linear Correlation between Environmental-Personal Factors and EPPA Index of Vowel Sounds, Seminar II Students, G-01 and G-02



SOURCE: Questionnaire Survey addressed to Seminar II students, UES Nov 17

Appendix L: Pronunciation Video Links

Vowel phoneme pair or trio	Name of the video	Link
/u/ and /ʊ/	Vowel Pronunciation - u (uh-oo)	https://www.youtube.com/watch?v=21b69Q-9S6c
	American English Sounds - UH [ʊ] Vowel - How to make the UH as in PUSH Vowel	https://www.youtube.com/watch?v=phlnzIzCPqE
	How to Pronounce English Vowels -u- boot and -ʊ- book - American English Pronunciation Accent	https://www.youtube.com/watch?v=NORzH0PnfPE
/i/ and /ɪ/	Accent Training - Lesson 02 - Pronunciation of Vowel sounds -i- and -I-	https://www.youtube.com/watch?v=5jX-ORMBCFo&t=952s
	English Pronunciation- Sit -i- vs Seat -i- -	https://www.youtube.com/watch?v=GhwAARLgwqQ
	Pronouncing the short i -i- in American English	https://www.youtube.com/watch?v=paqsPxjr104
	Vowel Sound /i/ as in "it" – American English Pronunciation [updated]	https://www.youtube.com/watch?v=Ok_HG-0INCA&list=PLYJV5Moz9cfzjvOs8X4dOSrpMGHZL9mSo&index=3
/i/, /ɪ/, and /e/	American English Pronunciation Course Lesson 1 SEAT, SIT, SET	https://www.youtube.com/watch?v=sZg2sKOfOkQ
/ə/ schwa	El sonido vocal /ə/ (Schwa) como en “ago” - Pronunciación del Inglés Americano	https://www.youtube.com/watch?v=m1mDSUSwNls
	Everyday English Pronunciation: How to use the SCHWA in American English	https://www.youtube.com/watch?v=IGG1BK61Rz4
	Elision of Schwa (Top 10 words)	https://www.youtube.com/watch?v=v6vpJ9TK27Q
	American English Sounds - UH [ə] Vowel - How to make the SCHWA Vowel	https://www.youtube.com/watch?v=2BmkUa4Mv60
	SCHWA PRONUNCIATION: When to	https://www.youtube.com/watch?

Vowel phoneme pair or trio	Name of the video	Link
	pronounce the schwa	v=3ZeRrThDnlk
	The Schwa /ə/ Sound - Endings British Pronunciation & Spelling Tips -er -ar -or -our -ure -re	https://www.youtube.com/watch?v=Nco2ifowuTk
/ɔ/	Vowel Sound /ɔ/ as in "on" - American English Pronunciation	https://www.youtube.com/watch?v=pr_KAu-_Hmo&feature=youtu.be
	Accent Training lesson 08 : /ɔ/ (aw) AS IN SAW	https://www.youtube.com/watch?v=EnuHoUOZTY4
	American Accent Training -- Part 05 aw sound	https://www.youtube.com/watch?v=QY3UphjzC7E
Vowels	American English Pronunciation: Lesson 1: Main Vowel Sounds	https://www.youtube.com/watch?v=h55MA4TSvr4
	American English Pronunciation: Lesson 2: Vowel Sounds /i/	https://www.youtube.com/watch?v=oX7kNrjA1MM
	🌟 American English Pronunciation: Lesson 3: Vowel Sounds /I/	https://www.youtube.com/watch?v=1EkrznWnqGM
	American English Pronunciation: Lesson 4: Vowel Sounds /eɪ/ & /ɛ/	https://www.youtube.com/watch?v=3P3bXY6R1kE

Appendix M: Validation Sheet



Validation Sheet for The Tools

Name of Validator:

Degree:

Position:

Number of Years in Teaching:

To the Evaluator: Please check the appropriate box for your ratings.

Scale: 1- Poor 2- Needs Improvement 3- Good 4-Very Good 5-Excellent

SCALE	1	2	3	4	5
ASPECTS TO VALIDATE					
<p>1. Clarity and Directions of Items The vocabulary level, language, structure and conceptual level of participants. The test directions and the items are written in a clear and understandable manner.</p>					
<p>2. Presentation and Organization of Items The items are presented and organized in logical manner.</p>					

<p>3. Suitability of Items The items appropriately presented the substance of the research.</p>					
<p>4. Adequateness of the Content The number of the items per area is representative enough of all the items needed for the research.</p>					
<p>5. Attainment of Purpose The instrument as a whole fulfills the objectives needed for the research.</p>					

Remarks:

Signature: _____

ANNEX

5-5 LIP POSITIONS FOR VOWELS OF ENGLISH		
Vowel	Lip Position	Picture
/iy/	Unrounded, can be stretched a bit	
/ɪ/	Unrounded, can be stretched a bit	
/ey/	Unrounded, not so stretched	
/ɛ/	Unrounded, not so stretched	
/æ/	Unrounded, open wide	
/ɑ/	Unrounded, open wide	
/ʌ/, /ə/	Unrounded, neutral and relaxed	
/uw/	Very rounded	
/u/	Moderately rounded	
/ow/	Rounded at the end of the vowel	
/ɔ/	Open and a bit rounded	
/ɚ/	A bit rounded	
/ay/	Unrounded → unrounded	
/aw/	Unrounded → rounded	
/oy/	Rounded → unrounded	