

TOWARDS A DEFINITION OF PHONOLOGICAL COMPETENCE —
AN EVALUATIVE MATRIX¹

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A system for an evaluation of a person's command of the phonology of a language must be able to rank students in a valid, reliable, and easily administered way. However, it should do more; it should give specific information about a student's command of each of those phonological items with which he, along with most other speakers of his language, is likely to have difficulty. In addition, it should assign a meaningful score, and be interpretable by non-specialists.

The system I use with German students has these characteristics and is summarized in Chart I. The Chart develops two kinds of information; the first shows how well a student has learned the items of English phonology which are usually difficult for German students; the second, which is related in an explicit way to the first, is an index of the student's general level of English phonology.

Although this system was developed for German speakers learning English, it can be adapted to describe any learner's progress in learning any language.

I am now going to discuss the Chart in some detail. The left-most column is an extensive sample of the problems which Germans have in learning English phonology. This is based on error analysis of the speech of over a hundred students. The items are ranked with the hardest items first, that is, those which cause the most errors, and the easiest items last. This ranking according to difficulty was based on error counts of twenty students. The vertical columns from left to right list the hierarchy of subskills leading to full mastery of an item of phonology in the order in which they are usually acquired. Above

¹ This article, a revised version of Dretzke and Martin (1975), was read at the 1975 TESOL conference held in Los Angeles.

	1 none	2 aware	3 hears word	4 hears S	5 repeats word	6 says word	7 says S	8 reads	9 part use	10 full use	weight X factor	begin points per item	ending points per item
1 r											2		
2 a											1		
3 w&y											4		
4 a:											1		
5 devoicing											4		
6 j											3		
7 vowel length											2		
8 dark I											2		
9 wh-question I											1		
10 word stress											3		
11 statement I											1		
12 direct address I											1		
13 series I											1		
14 θ+ð											4		
15 comma I											1		
16 cognates											2		
17 ow											1		
18 rhythm											4		

19 noun compound											1		
20 sentence stress											4		
21 sandhi											3		
22 s&z non-final											3		
23 or I											1		
24 o											1		
25 y											2		
26 uw											1		
27 u											1		
28 question I											1		
29 ě											3		
30 ž											3		
31 o											1		
32 š											2		
33 ay											1		
34 e											1		
35 fluency											5		
36 mumble											4		

Total percentage = $\frac{\text{Total points}}{800}$ total points total percentage

each of the subskills is a value assigned to each level or subskill attained. The column on the right lists weighting factors for each item. The Chart is filled in from information about the student's level of skill in the use of each item which one gets from a battery of tests. I am not concerned here with the tests themselves for which the Chart serves as an evaluation scheme.

To find a student's index of phonological competence, one multiplies the weighting factor by the number written above the lowest level of skill the student has attained and writes the product in the column on the right of the Chart. The points are added up and divided by the total number of points attainable, which on this chart is eight hundred. The result is an index of competence. The index, which includes the modification introduced by the weighting factor, states as a percent the degree of control the examinee has over the English phonemes which a German-speaking learner has difficulty mastering. A beginning learner should get a score of zero; one with near native-speaker control should get a score of one hundred.

The uses of such a system are numerous. At the beginning of each semester, after taking a battery of diagnostic tests, each student receives a copy of the Chart which has been filled in with the results of his tests: the Chart shows him exactly which items of English phonology he has and has not learned as well as the level of mastery he has attained for each item. He then has a highly specific set of learning goals before him. The teacher can plan lessons to deal with exactly those problems which the students have. Students are constantly given feed-back as to their progress during the semester, and all are again given a systematic battery of tests at the end of the semester. A comparison of the first and last test results shows the student's progress in a highly specific way. Another advantage of this system is that it makes possible reliable comparisons between two different examinees by two different testers. The percent or index of phonological competence which this Chart produces can be used to define the levels one must reach in order, for example, to qualify to teach English or to pass various levels of examinations. The evaluation system and Chart remain the same although pass levels may vary for various purposes.

In the remainder of this paper, I would like to discuss the four factors which enter into the Chart of Evaluation. The first factor is the list of thirty-six items of the ordered list in the left column of the Chart. Some of these items could be analysed further, but without sufficient improvement in the Chart's power of discrimination to justify the added difficulty of administration. Let me take one example. Some German speakers pronounce /ð/ (the voiced TH phoneme) correctly at all times, but distort a preceding /s/ or /z/ due to assimilation. Thus "because they" may be said incorrectly as /biykəθ ðey/. Instead of having a special row for such an error, I enter it in the /ð/ (voiced TH) row. One could also distinguish among the various kinds of word

stress errors typically found among German-speaking learners of English, but the Chart would become unwieldy.

The second factor is the order of the items. The difficulty in learning the items decreases from top to bottom. The items near the top of the list are learned only by the best students; those at the bottom are learned by most students.

The third component of the system is the hierarchy of skills, numbered one to ten, listed on the top of the Chart. If any component of this system of evaluation has a claim to originality, it is this one, and so I will discuss it in some detail. The hierarchy represents the sequence of the learning of those skills which make up the total mastery of a phonological item; the stages range from no knowledge of the existence of an item to unconscious, correct use. The Chart shows exactly how much control the student has of each of the problem items. Knowing a student's level of competence in the use of an item, a teacher can plan exactly those activities which will lead a student to the next higher level of competence. Let us consider an example. Adults are unlikely to learn the /ð/ phoneme until they realize that this sound exists in English and is essentially different from the /z/ or /d/ phoneme which, because of interference from German, are the phonemes they at first think they hear. The same lack of awareness of a phonetic distinction can appear in a language with two dialects.

Where I come from, there is no unvoiced/voiced final fricative alternation in the pronunciation of such pairs as:

wife wives
booth booths
knife knives.

They are pronounced:

[wayf wayfs]
[buwθ buwθs]
[nayf nayfs].

In college I learned the standard pronunciation of these words. But the singular form of *leaves* is seldom heard, and I continued to think that the singular of *leaves* was said /liyv/ until I was a graduate student! Language learners do not usually learn the use of a phonological item simply by being told that it exists. Listening, training and controlled repetition are also needed. Let us consider a higher level on the hierarchy. Some students can say /v/ (the v phoneme) correctly in words, but not in sentences where other distractions lead to a breakdown in the insecure knowledge of /v/. Ability to hear a phoneme is no assurance that one can produce it, and being able to repeat a

word after a model does not mean that one can use it freely in conversation, that is, that one has accurate, fluent control.

The hierarchy of skills constituting the full use of an item is ordered as follows:

Mnemonic	
On Chart	
None	1. No knowledge.
Aware	2. The student realizes that the problem exists.
Hears word	3. He can hear the difference in a word.
Hears S	4. He can hear the difference in a sentence.
Repeats word	5. He pronounces the phoneme correctly in a word after hearing it spoken.
Says word	6. He pronounces the phoneme correctly at the word level.
Says S	7. He pronounces the phoneme correctly at the sentence level.
Reads	8. He pronounces the phoneme correctly while reading a passage.
Part use	9. He pronounces the phoneme in a conversation if he knows that this pronunciation is being listened to.
Full use	10. He pronounces the phoneme correctly in conversation.

In a program for developing these skills in students, steps 1 through 6 are achieved by getting the students to hear and imitate the phoneme in words and phrases. To reach steps 7 through 10, the students do repetition exercises in a variety of contexts under supervision to internalize the use of the items. Such teaching would include everything from simple drills to free conversation, and during the entire learning process the students are constantly made aware of lapses in their performance.

The idea of testing the control of a phoneme at these various levels comes from classroom experience. Some of my students with nine years of English training do not realize that there is a difference between German uvular /r/ and American retroflex /r/. They cannot simply be told that there is a difference, but have to go through the usual procedures of presentation, drill, and communication before they have mastered its use. When a student has less than full control of an item, the Chart determines what his highest level of skill with that item is and he is given training appropriate to that level.

So much for the hierarchy of difficulty. I now come to the last of the four components of the Chart; although the idea of a weighting factor is not a new one, it is complicated and requires detailed discussion. The weighting factor contributes to a more reasonable overall index of phonological competence by bringing the points gained for control of an item into balance with

that item's importance. Without weighting factors, phonological evaluations would make the implicit claim that all items are of equal importance. Obviously substituting *schwa* for /a/ is not as serious an error as devoicing all word final consonants. The ignoring of weighting factors is seen in the common testing practice of having a student read a passage with preselected items, all of which are equally graded.

The assigning of weighting factors is unavoidably a subjective process. Still, the process of establishing weighting factors can be made more objective if it is done according to explicit valid criteria. Three criteria should govern the assignment of weighting factors to an item: first, the influence the item has on communication; second, its predominance; and third, the difficulty Germans have in learning it. In 1971 Prator considered the value of teaching various types of pronunciation in relation to the influence which various types of errors have on communication. He concluded that we have too little information about how important various phonological elements are to the intelligibility of speech and that we have to fall back on intuition to establish their relative importance. I agree and have assigned greater weights to items which I feel carry more informational content. This is a phonemic consideration. The second criterion is "predominance". By "predominance" I mean the frequency of occurrence of an item in normal speech of the target language, and the degree of foreignness a native speaker perceives when he hears the foreign substitute. Predominance may affect communication indirectly if the listener is distracted from *what* is said by *how* it is said. This is mainly a phonetic consideration. The third criterion in setting a weighting factor is the ease or difficulty a student finds in learning the item. If the item is easy to learn, I have assigned more weight to it so that the overall evaluation reflects a penalty for not having learned simple items. This is a pedagogical consideration.

Let me take an example to illustrate how these criteria interact to assign a weighting factor to the /r/ phoneme.

The German uvular trilled /r/ would never be taken for anything but an "r" because of the low potential disturbance of communication. I start off with a weighting factor of one. However, a native immediately hears the foreignness of the German substitute, and it is a very frequent sound in English; because of these considerations of predominance, I raise the weighting factor to three. Finally, because the American retroflex /r/ is very difficult for Germans to learn, I assign a final weighting factor of two to the /r/ item.

In conclusion: the system described above develops two kinds of information. The first kind of information shows the level of competence an examinee has reached in the use of each of the items of phonology with which German speakers tend to have trouble when they try to learn English. The second kind of information is an index of the overall phonological competence

demonstrated by an examinee; this index is a function of the degree of mastery an examinee has attained in the use of each item, multiplied by a weighting factor which assigns a value of importance to each item; when the total number of points which an examinee obtains on the Chart is divided by the total obtainable, the result is an index of his phonological competence.

REFERENCES

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