

By Ear and by Eye - adaptive tutoring for foreign language pronunciation training

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The Fluency system is designed to be used by a student to improve his accent in a target language. One principle of foreign language teaching that dictates the manner in which Fluency is implemented is that students must feel comfortable and self-assured in the learning situation in order to progress. This is the reason we have implemented a dual interface that attempts to take into account the individual student's best way of learning.

In the past, many foreign language teachers have corrected pronunciation by showing the student exactly where to place his articulators and having him practice doing it. Many teachers observed by many of them that once the student's own *production* was correctly in place, his *perception* of the target L2 difference followed. This practice may have been influenced by Liberman's motor theory of speech production. But in the past few years work by Akahane (ICSLP '96) has shown that foreign speakers could be trained to produce correct phones by *listening* to targeted differences (minimal pairs) alone. The students' perception *and* production were improved using this method, and this remained true over periods of 6 months / 1 year. This finding has lead us to propose that there may be two different populations, one that responds better to visual (visual/articulatory) instruction and one that responds better to oral instruction. We may find that some students do not respond better to one of these modes as opposed to the other, and we are prepared to create a third interface that uses both visual and oral training if this is so. These separate types of learning have been alluded to in the literature, but no hard proof from controlled tests has yet been shown.

We have developed a double interface to Fluency's duration module that allows the user to either have correction furnished orally, or visually. In the case where the user is not sure whether he will respond better to one type of instruction or the other, we have also developed a simple test that is intended to determine this. We will show demonstrations of the dual interface and the test at the Workshop and describe how it operates.

We are now "testing the test". We test the user with: a visual memory test, 2 oral memory test and a visual/oral test. The latter serves as a reference. We then compare performance on these four tests to increase in correct pronunciation using one or the other of our interfaces. We will show the correlation (or lack of it!) at the Workshop.

If our test is proven correct, automatic foreign language tutors would not be the only domain that could benefit. Many other system interfaces could be bettered if they give feedback in the mode in which the individual user is most likely to retain it.

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