Trudell, B. and Young, C. (eds.) 2016. *Good Answers to Tough Questions in Mother Tongue-Based Multilingual Education.* SIL International.
http://www.sil.org/literacy-education/good-answers-tough-questions-mother-tongue-based-multilingual-education

When the orthography of the local language is not yet standardized or requires further review in order to adequately represent the linguistic features of the language, how should this challenge be handled in the program?

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1 Introduction

Poverty isn't the only barrier to learning. Another significant challenge to the learning of millions of rural children is that their language is unwritten. As governments and NGOs in the South try to provide reading materials for speakers of even large language groups, they often discover that writing instructional materials is like trying to cook a stew without a pot!

Since orthographies no longer have the luxury of evolving over centuries as their users experiment with them, and because they are significantly influenced by their sociolinguistic context, it is imperative that technical experts be involved in their development or modification. The experts who each play a crucial role include readers who speak the language, linguists who can analyze its grammar and phonology, and literacy experts who can advise on readability issues and test the orthography (Schroeder and Schröder. Forthcoming).

If a group of adults were assembled who are literate in a language of wider communication, it is easy to assume that those people will be able to spell and write in their own language. It can also be assumed that mother tongue–speaking teachers will read and write their language easily and accurately. But curriculum developers often discover that:

- speakers of the language complain about reading being difficult
- the adult literacy rate in the community is very low, despite the existence of literature
- readers are having significant problems with comprehension, despite the fact that the literature is written in their mother tongue
- people don't know how to spell certain words because there are no rules to guide them, so spelling is inconsistent—even for teachers.

2 The context

If a problematic orthography is to become standardized and used widely, it will require input from linguistic study of the spoken language and good coordination with speakers of the language, usually carried out by linguists and literacy experts, finding out which elements of the language must be represented visually. These technical experts work with L1-speaking stakeholders: literate educators, community leaders, and literature developers.

These participants in orthography development should gather any published and unpublished documents describing the grammar and the phonology of the language, and any writing rules previously agreed upon before anything was published. They will make a list of vowel phonemes with a gloss and

minimal pairs (such as bit vs. bet, boot, bat, bait) from the same part of speech. They will list all possible syllable structures and where they occur within words.

If there is an existing orthography, they will list its symbols along with the sounds they represent. They'll also briefly describe important features of grammar and affixation to be noted, including pronouns, locatives, case, verb tense, auxiliary verbs, plurality, mood, and word order. If spelling rules have already been documented, they will study them and discuss their effectiveness with users.

Someone may also need to examine the role of tone in the language. If it communicates meaning for grammar, especially, it may need to be represented in the writing system. An example: In the Bassa language, Liberia (Samuel Cooper, personal comment), <ḿ> means 'I' or 'me', but <m̀> means 'you'. Tone marks the difference between those two pronouns and many other grammatical words.

SIL International is one organization that has experience with participatory approaches to orthography development (Kutsch Lojenga 1996, Schroeder 2008) including multiple stakeholders. Every sociolinguistic situation is unique, but two strategies for a participatory approach emerge:

1. For unwritten languages, involve L1 speakers from the outset, so all phonological and grammatical discoveries are made with their involvement. L1 speakers assist linguists in the documentation and analysis of their language, thus helping them understand the tensions between representing the sounds and also the meaning of their language, in writing.
2. When dealing with flawed orthographies, raise the awareness of L1 speakers who are already literate, of the problems with their orthography by letting them experience the comprehension and spelling problems. Then let them try out a limited set of proposed solutions.

Once an orthography is standardized, the ultimate users are the whole language community, but its effectiveness should be tested first. Let its immediate users be the ones to try using a draft orthography, for at least a year (two years may be better), with a reading curriculum, before considering modifying it. A children's literacy program is an ideal setting for testing an orthography because there will be trained teachers, a curriculum, and a large number of willing, unbiased participants: children.

Discuss the results of testing, propose a limited set of viable solutions, and choose one for piloting. After finalizing the spelling rules, produce a writers' guide alongside speakers of the language, explaining spelling rules with examples. Accompanying a writer's guide, a dictionary or simple lexicon with gloss in a language of wider communication would be very useful to both teachers and authors.

Limitations come from the nature of the orthography problem: is it purely sociolinguistic, deriving from people's attitudes toward their language and other languages? In this case, awareness-raising is crucial, as well as the involvement of community leaders in decisions made. As mentioned above, an extensive participatory approach which begins with linguistic analysis and ends with spelling decisions helps ensure comprehension and ease of learning for all users. If it is teachers who have encountered an orthography problem, their input, as observers of literacy learning, will be vital.

There are several situations which repeatedly arise as literacy curricula are developed for unwritten or not-yet-developed languages. Here is a sampling, with ideas or solutions to try, for each.

3 Recommendations: Some ideas to try

Situation 1. You try to begin writing decodable readers, using a word list from the language or a dictionary, and you find that there isn't one. With no dictionary and no spelling guide, people don't know how to consistently spell speech contrasts such as long and short vowels. They struggle. When there are no explicit rules for writing any important sound or meaning contrast, people write as it sounds to them personally. This leads to inconsistent word appearance in literature, and to important contrasts in the language being masked.

You expect mother tongue speakers of a language to have a fair degree of confidence in spelling their own language, but you find they don't, because they have no rules to guide them and little or no literature. I saw the resulting spelling and comprehension problems when developing MLE curricula for the Borana language [gax], in Kenya.

Idea to try: Analysis of phonological patterns within words usually shows the linguist when vowel lengthening is predictable due to phonological processes in speech, vs. when lengthening is actually meaning-based, so the contrast must be consistently written. The Zanaki language of Tanzania [zak] is one of many which must write vowel length distinctions (Gray 2009). One example of contrastive verbs is given here: *okukura* 'to grow up', vs. *okukuura* 'to shout for help'.

When there are no spelling rules for vowel length, disregarding it can be disastrous. The Bukusu [bxk] language of Kenya has none, resulting in inconsistent word spellings even within the same book, and comprehension challenges too, because the essential contrasts are often masked. Three simple spelling rules usually make it all fairly straightforward:

- If the vowel follows a <w> or <y>, it sounds long but really isn't. Write it short.
- If the vowel precedes a nasal cluster such as <mb, mp, nd, nt…>, it looks long but it really isn't. Write it short.
- If it sounds long in any other situation, it really is long. Write it long.

This solution has worked for many other speakers of Interlacustrine Bantu languages, such as Ganda [lug] (http://www.buganda.com/language.htm). But testing and interviewing readers and writers who have practiced using these rules is the only way to know for sure.

Situation 2. Mother tongue speakers can't understand what they "read." Some essential feature of the spoken language is not represented in writing. For the Maasai [mas] of Kenya and Tanzania, tone indicates case (Payne et al. 2012). If you can't tell the object from the subject of a sentence, reading is almost impossible. And if tone also distinguishes subjunctive imperative and negative imperative ("you should do" vs. "don't do"), readers can completely misinterpret a basic sentence. The result is failed communication for writers and ambiguity for readers. Comprehension is the major goal of reading, while communication is the major goal of writing. If readers aren't understanding what they read in their own language, some important speech sound /sound contrast is not written.

Idea to try: Involve the community by raising their awareness and in choosing a tone-marking strategy. Try it out on a fairly small scale for at least a year. Test both children and their teachers, to learn whether the strategy has helped their reading comprehension, accuracy, and fluency. I did this with twenty-four Maasai teachers. Their comprehension of tone-marked text was 25% better than their comprehension of a similar, unmarked text, though their reading was a bit slower.

Situation 3: You find that even experienced readers are slow, and they have to read aloud in order to understand. They don't recognize whole words at a glance. Writers may need help with breaking up the rapid stream of speech into simple, consistently spelled words. For the Ikizu language of Tanzania [ikz], inconsistent spelling of words (Eaton and Schroeder bb12:230) results in the simple word 'and', <na>, having four different spellings, based on rapid speech pronunciation rather than writing each entire word consistently. It can be spelled as <na, no, ne, nɨ> (Sandeen and Gray 2013:25). The vowel prefixes of all the nouns following 'and' have been deleted from the noun to which they belong and visually moved to the end of 'and', giving it these various visual forms:

<na baatʉ> rather than <na abaatʉ> 'and people'
<ne ngoko> rather than <na engoko> 'and chicken'
<nɨ bɨsʉbɨ> rather than <na ɨbɨsubɨ> 'and egg yolks'
<ni miri> rather than <na imiri> 'and roots'

Idea to try: Consistent word appearance promotes fluency. The second option in each example is preferable. Try writing all such grammatical, frequently appearing words, with the same spelling everywhere. This amounts to writing slow speech. Give learners at least a year of significant practice, and then test to see if they have started recognizing such words immediately. Expect their immediate word recognition to be quick, and their oral reading to reflect natural-sounding speech, because elision of vowels between words in rapid speech is normal.

Situation 4: Bassa [bsq] children in Liberia read mostly short words, but have to decipher stacked nasal and tone symbols (hi, lo, mid, falling and rising), resulting in a huge vowel grapheme count)! The number of vowel graphemes for Bassa include its seven vowel heights (degree of openness in the mouth) <a e i o u ɔ ɛ> and nasalized vowels <ĩ, ɛ̃, ɔ̃>. Each of these vowel symbols is also marked for high, low, rising, falling, and mid tones, like these variants for the vowel /ɑ/: <a, á, ă, â, à>. The Bassa child must therefore recognize a total of 65 vowel symbols. Each vowel symbol carries information regarding tone, nasalization, and vowel height. These complex symbols constitute a heavy grapheme load for the reader. Simple appearance of graphemes eases the cognitive load for the reader, promoting fluency.

Idea to try: This principle applies to readers who try to decode using very different scripts for different languages: try to make the visual symbols simple. For grapheme overload such as the one described above, try eliminating one symbol at a time, systematically. Test the effect this has on readers' comprehension.

Grapheme overload also applies to children having to learn various scripts simultaneously. When there is no alternative to teaching children to read very different scripts, it is important to allow mastery of one before introducing another. Also, use a teaching methodology which helps the learner use what he/she already knows, to learn the second one. Example: if the first script is syllabic, teach the Roman script with syllable recognition at the forefront, rather than focusing on individual alphabetic letters. Recognizing syllables at a glance will help the readers make the leap from one script to another.

4 Conclusion

Common symptoms of poor or underdeveloped orthographies are:

Fluent readers struggling with comprehension, though the language is theirs.

People reading very slowly, though they can read other languages fluently. They may read and then re-read, words or whole sentences, changing their pronunciation the second time. These may be symptoms of an under-differentiated orthography (in which all the important sound distinctions are not written), or of words being written inconsistently. More rarely, they are due to grapheme complexity, which is very taxing on visual perception.

There is a natural tension between the principle of grapheme simplicity, and the maximum representation of linguistic contrasts. No solution will be perfect, because language is auditory and writing is visual, but testing the effectiveness of an orthography usually helps its users find something which is comprehensible and learnable.

If you suspect an orthography problem in the literacy project you are working with:

Gather all existing resources: wordlists, dictionaries, and linguistic descriptions of the language.

Contact your nearest SIL linguist or literacy consultant. He or she is trained for analysing languages and proposing orthography solutions.

Basic, yet inherently conflicting, readability principles common to all of the orthography examples given are: strive for simplicity of symbols used; strive for maximum representation of the sounds of a language; and strive for consistent word appearance. An orthography should then be tested, or tried out, before it is widely used.

The language attitudes of the speakers of the language play a significant role in the acceptance and use of any orthography, so involvement of these ultimate users in orthography development is essential.

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