Learning Vocabulary and Syntax in a Second Language

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Learning vocabulary is a very important first step in learning a second language. Only when sufficient vocabulary has been learnt can a second language learner move on to syntax, which includes grammar and the nuances of spoken expression. In this paper we address the question of how a simple phone app, or a computer program, can help second language learners move from a beginner status toward fluency in another language. It is argued that this can be done by learning vocabulary, and then reading out and listening to appropriately graded texts and then creating their own self-talk conversations in the second language.

Introduction

This paper was stimulated by reading *The Routledge Handbook of Second Language Acquisition* (2012), in which current scholarship in this field was both summarised and explained. It includes a chapter "Vocabulary" (Batia Laufer and I.S.P. Nation), which was a useful means of testing the app I have designed to help students learn vocabulary and other aspects of second language acquisition. I call this app "acquire-vocab". This chapter starts with the basic premise that "the real intrinsic difficulty of learning a foreign language lies in having to master its vocabulary." The authors of this chapter recognised that, whereas grammar is relatively easily learned by those who can thoroughly learn the relatively few rules involved, vocabulary is an open set that contains many thousands of items. This simply means that vocabulary is a challenge, for which there are no easy or painless solutions for most students.

All of this assumes that the second language uses the same letters or characters as the first learner's first language. Where this cannot be assumed, an extra step is required, which is to learn the sounds of the letters of the second language where they look or sound differently from the first language alphabet (including formally introducing ß for English learners of German). If the second language uses characters rather than letters, this is currently out of the scope of the development of the app, although we could explore, at some time in the future, using a system like Chinese *pinyin* for new learners of Chinese.

The Routledge book moves far beyond the challenge of gaining vocabulary and deals with a whole range of issues relating to second language acquisition. Here I discovered that solutions to many of the issues raised find themselves addressed in my app (I also added a new feature to the app as a result of this reading). Therefore, I thought that scholars in this field may also be interested in my attempted solutions to these issues as well as my attempts to deal with my first love, the acquisition of vocabulary. So I turn to that first.

Vocabulary acquisition

As Laufer and Nation pointed out, vocabulary teaching has been underplayed in curriculum design, although some attention has been paid to building relevant word lists, with this

currently receiving more interest than was previously the case. In building such lists, the question arises whether these lists should be based on likely word frequency and usefulness, or whether they should be based on the difficulty or ease of learning, with ease of learning arising in part from the presence of cognates and difficulties arising from the presence of "false friends." At least if a large number of cognates can be learnt it was thought that this would increase the learner's ability to function in the second language.

Laufer and Nation noted that lexical competence can be considered in two ways. Firstly, there is the total vocabulary; secondly, there is the issue of comprehending the range of meanings.

In an ideal world, one would know every word that is encountered and would know the full range of meanings of that word, at least in context. Yet second language acquisition is not starting in an ideal world.

To deal with both issues, in our app, learners first learn the basic meaning of each word, as well as working towards understanding the learnt words in context. Before the reader encounters a new word in a story, it is introduced in a formal setting, with the word, its meaning and its grammatical form being learnt. So, firstly the learner is explicitly taught the word, with its primary meaning and grammar. Having explicitly learnt the word/meaning pair, the learner will read part of a story that uses that word, so the learner will soon encounter the word in context.

Beginner students are mostly restricted to learning the primary meaning. Non-beginners will encounter multiple meanings at that word-meaning phase, where this is essential, but always with the primary meaning in the first place.

Dealing with the issue of vocabulary size, in our app we only teach the words required for a given story; in regard to meanings we stress the primary meaning, but we provide supplementary meanings for more advanced students as an additional resource.

Laufer and Nation observed that it is often thought that new words are acquired as a by-product of exposure to the second language - this is "input-based learning." Yet they quoted research demonstrating that about ten exposures to a new word learnt via input-based learning are required before there is a reasonable chance that this word will be recognized in a later reading.

Thus, I would assert that, since vocabulary acquisition is a key element in gaining second language competence, the frustration involved in the inbuilt failure of the input-based method of learning vocabulary and the reduced focus on word-focussed vocabulary acquisition are primary causes of the difficulty for all except the most gifted learners to attain any reasonable level of fluency in a second language. (This is just my personal reflection out of my own experience and that of the experience of others, about which I am personally aware. It is not a scientifically established fact, yet.)

Laufer and Nation concluded that word-focussed learning is superior to input-based learning. In our app, we combine the two methods, but in the correct order. Firstly, the words are learnt in a word-focussed environment; secondly the words are encountered in context.

Laufer and Nation claim that In word-focussed learning, it is not sufficient to only learn the word once; rather exposure to the new word should be done using a time-phased approach so that the word is again brought to mind just as it is beginning to be lost to the memory. While measuring the appropriate timing is both difficult to measure and would vary from person to person, in the app we have arbitrarily set it up so that the learner sees a word six times, over a period of eighteen sessions. In addition, we encourage the learner to self-test himself or herself on the way through, allowing the learner to reset the time-phase to an earlier point if difficulty in remembering a particular word is encountered. (This can be done in the app by the learner marking a word as "Not learnt.") In addition, we do a formal spelling test (including the article for nouns, where this is appropriate), two times during the word learning process.

How learning happens

In a nice summary of the development of scholarship in this area, in a chapter entitled "Interactionist approach" (Alison Mackey, Rebekha Abbuhl and Susan M. Gass), the usefulness of interaction between a learner and a more fluent speaker of the target language is discussed. The benefits of this approach include the fact that various processes, like clarification requests, confirmation checks, repetitions and recasts (of imprecise and incorrect speech), can be used to improve a learner's grasp of the target language. However they also observed that such interactions carry the risk of increasing the learner's level of anxiety. It is my experience as a second language learner that anxiety is a significant hindrance, particularly where the learner's confidence is already low.

In developing their theme, the authors canvassed a number of very useful and practical ideas:
- Learners can improve their second language skill-sets by engaging (passively) with appropriately graded texts, being those which are comprehensible to the learner but slightly above the learner's current level of proficiency.
- Comprehensible input is vital for second language acquisition: the more the better.
- Second language learners benefit from having their attention drawn to formal features of the target language.
- Task-based learning places an appropriate emphasis on learning forms, overtly drawing the learner's attention to linguistic elements are they arise incidentally in lessons.

Each of these aspects are taken up in our app:
- The task-objective of the app is to help students to read an appropriately graded text, acquiring all the vocabulary needed for that text before reading the text.
- The plan is to provide a range of texts that students can read, listen to and practice speaking, being texts that are appropriate for each student's current level of learning.
- As the vocabulary is acquired, students learn the required linguistic elements, being only those elements that are appropriate for their age and experience.

- As the story sub-sections are read, syntax that is difficult to understand in the target language sometimes can be learned through learning relevant phrases before encountering them in the text. Very unusual syntax (from the point of view of the first language of the learner) is explained, but in most cases the student will acquire an understanding of the syntax by reading the texts.

In a chapter entitled "The role of feedback" (Shawn Loewen) it is stated that learners need to be developmentally ready to benefit from external feedback. In our app, there is no external feedback. To deal with this, the app provides a range of self-testing procedures and obligatory tests. These include:
- Time-phased self-tests of each word and its meaning.
- Time-phased self-tests of pronunciation.
- Time-phased self-tests of primary meaning to dictionary citation.
- Obligatory tests of primary-meaning of the second language word dictionary citation, verified by correctly spelling the word in dictionary citation form.
- Obligatory listening test of second language word in context, verified by correctly spelling the form actually used.

These tests are designed to correct lexical errors, and to improve phonological and morphological understanding. Using this approach, students can learn without anxiety, but they could be frustrated if they skip the self-tests!

In the app, there is no testing of learners' errors in creating their own written or spoken scripts. This latter testing requires external feedback. In our system, learners are mostly required to work on their own.

In an educational environment, the partially self-directed learning provided in the app means that specific stories can be prescribed as pre-requisites for taking a particular second language course of study, or for a lesson. When students have done their pre-course work, this will serve to reduce learner anxiety during classroom activity. It will also serve to ensure, as far as is possible, all learners are at approximately the same level. In this "ideal world" the class can proceed in a way that even the least able student should be able to participate in classroom work (provided that this student has properly prepared for the course or the lesson).

Overcoming entrenchment

The entrenchment first language constructs in the mind of the learner can hinder the acquisition of a second language. Nick C. Ellis in "Frequency-based accounts of second language acquisition" make the point that expectations of how a sentence is formed that come from the learner's first language can blind that learner to aspects of the second language, making it harder to learn.

On the other hand, when reading a second language one must be able to make sense of the sentence structure, even when it is counter intuitive. Two helps are provided in the app: firstly a fairly literal translation into the first language of each sentence is available. This will enable the learner to recognise the unexpected form, and to learn how to adapt. Secondly,

repeated exposure to the second language through reading many texts will gradually entrench the second language in the learner's internal second language rules. Indeed, as Ellis comments, "Language learners have to acquire the construction of their [target] language from usage."

When dealing with vocabulary, the initial phase of learning the word-meaning pair can be reinforced by appropriately timed additional test repetitions. With a more robust memory of the pair occurring over time, later retrieval trials can be spaced further and further apart. Similarly, if the spelling matches the pronunciation (as it does in some languages more than others, and in others not at all) this can provide support for building a stronger memory of the word-meaning pair.

In Brian MacWhinney's "The logic of the unified model," he argues that it is of assistance in learning vocabulary to learn vocabulary in "chunks," being regular phases that do not require further analysis to know the meaning of that particular set of words. For example, *Comment allez vous?* The frequent use of his expression will mean that the learner of a second language of French will soon know what this means without decoding each word, especially if it is specially taught in the app. This is an aspect that we need to investigate further.

Proceduralization is far more difficult. This is the process by which the speaker takes a series of separate elements and builds them into a single processing unit. Some researchers believe that it is extraordinarily difficult for second language learners to do this efficiently. However, when one listens to Europeans (and Chinese) speaking English, one can soon learn that this is not an insurmountable problem. MacWhinney suggests that proceduralization can be successful in adult learners provided the rules are consistent, simple and reliable. Of course, the rules do not always meet these requirements, but the learning can be structured in the app so that the learner is initially faced only with consistent, simple and reliable rules.

When learning vocabulary, in the app we always teach all the forms for nouns and adjectives, together with any relevant definite article for each noun.

When learning the relevant conjugations for verbs, beginner students only learn a tense-set of conjugated forms for verbs that do not any irregular forms in that set; the individual conjugated forms in this case are learned separately, and only if required by the text.

MacWhinney says that one cannot rely upon implicit learning proceduralization of sentence construction from reading texts: some explicit methods of teaching are required. This makes very good sense, for learning how the system works before trying to use it always a good approach. Classrooms are a very good place to teach this information explicitly, although brief notes in this regard can be helpful. These would be required to show the difference between first language rules and second language rules, and these can appear where these differences are first encountered in a text.

In an exposition of a very useful idea, MacWhinney built on his observation of children playing, when they talk to themselves as they do a task, thus using their native language in a

way that will not result in correction or embarrassment. In this way, the child builds a connection between speaking and the accompanying action. Similarly, it is possible to build into the app an encouragement for the learner to practice for themselves a reconstruction of a part of the story they have read, inventing new ways of communicating the meaning of the text that has just been read, but this time in their own words in the target language. This idea has now been added into the app.

As is asserted in "Processability theory" (Manfred Pienemann and Jörg-U. Keßler),the learner can process only those second language forms that the learner's "language processor" can handle. However, with the graduated reader approach followed in the stories included in the app, each new language form being appropriately introduced, this should not be a problem. It could become a problem where the stories do not address a particular new "language form," but that is addressable if identified.

Teaching Grammar

First language grammar can be a hindrance to processing the input from a second language. This is explained in the chapter entitled "Input Processing (Bill VanPatten). For example, when learning from English a situation where the subject appears after the verb (as in *me gusta el regalo de navidad*) can be challenging.

When a situation appears in the input text that is likely to be challenging to the second language learner, it is appropriate that the "difficult" second language rule be explained to the reader. This kind of pedagogical intervention can be done in the app by providing a note in the translation that explains the new rule. This can be applied in all cases where the input is likely to be misunderstood by the second language learner, at least on the first occasion in which it appears.

Will the learner remember new rules and how often should the new instruction appear? Problems like these are addressed in the chapter "Attention and awareness in second language acquisition" (Peter Robinson, Alison Mackey, Susan M. Gass and Richard Schmidt). They propose that, firstly, the student must be aware that there is an issue to be considered - here the app can help by providing a hint that this situation applies (provided the person preparing the text encodes this information in the translation section) and, secondly, the learner should be encouraged to check it out. Whether the student is likely to understand and pay attention to the instruction is something that has to be tested more objectively.

Understanding Speech

Where the modality of sound production is markedly different between the student's first and second languages, this can lead to a higher level of difficulty in perceiving what has actually been said, see "Second language speech perception" (Debra M. Hardison). Hardison suggests that adding visual clues (and even haptic clues), such as being able to see the lips of the speaker, can increase the efficiency of adult students in correctly understanding speech.

This could be a useful extension of the learning process in our app, particularly when learning English from an Asian language, and maybe in other cases as well.

Speaking and writing

Writing has a dynamic that is quite different from speaking. This is addressed in "Speaking and writing tasks and their effects on second language performance" (Folkert Kulken and Ineke Vedder). They write:

> "Compared to speaking, where the information which has already been produced must be maintained exclusively in memory, in writing the already written text can be re-read. Besides that, writing is often five to eight times slower than speaking, since more time is needed for the verbalization of content. As a consequence, cognitive resources can be used for a longer period of time, from which information retrieval from long-term memory as well as planning should benefit. Moreover, while speech production requires continuous progress, language production in writing is self-determined: it is possible for the writer to stop the grapho-motoric process and to concentrate only on retrieval or on planning processes. The cognitive load of writing compared to speaking is therefore lower."

All of this is easily understood, but this poses two significant difficulties preventing this idea being included in our app.

1. How can this process fit in with the gamification objective of immediate feedback and rewards for success? The problem here is that both writing and speech are creative processes with an almost infinite range of "successful outcomes" and a truly infinite range of "unsuccessful outcomes." So how can the app provide meaningful feedback?
2. As noted above, writing requires lots of time, especially where accuracy in writing is the part of the intended outcome. In the light of the acknowledged differences in these tasks, how can we maintain the students' interest, attention and commitment to the task of writing correctly?

Our app concentrates on reading, listening and saying the already encoded material. There is no opportunity for checking one's own written work.

One must consider whether such a process should remain outside of the app and be addressed in a classroom, or whether it can be included in the app.

Rather than changing the app or relying on the classroom activity, a non-classroom solution could involve the student being given a series of questions in the target language, which the student also has to answer in writing in the target language. These answers could be submitted electronically, with the results being read and marked by a trained second-language teacher in that language. In this case, students would be naturally motivated to carry out this task if they choose for themselves to undertake this task, having paid the appropriate fee for the service.

Aptitude

It is easily observed that some students learn a second language more easily than other students. While agreeing with this observation, Peter Skehan "Language aptitude" argues that if it difficult to measure aptitude and when we can measure it, it is a challenge to know how to use this information appropriately. However, he sees that there could be significant benefits in learning a second language if it were possible to match aptitude with instructional methodologies. He also points out that aptitude researchers believe that aptitude information can be used to predict the time it takes to achieve a criterion; it should not be used to exclude candidates.

The premise of our app is that despite the difference in aptitude, almost all students can successfully learn a second language to the level being explicitly taught, provided that they do the work that is required. Thus our design is intended to make it easy and rewarding for students with a lower natural aptitude for second language learning to actually do the amount of work required, since that work is well defined with progress being able to be achieved and noted at every level. Those students who have a higher level of aptitude simply have to do less work to achieve the target level of knowledge at each step.

Motivation

As Ema Ushioda and Zoltán Dörnyei "Motivation" observe, motivation is difficult to measure in an objective way. Certainly, the motivation for learning a second language is enhanced by the desire to interact with other communities. Yet it is not clear how this can work in an essentially single-language culture with limited physical access to "other communities," such as is the case in Australia. This applies despite Australia's multicultural framework, since in my country most communication across cultures actually takes place in English. Perhaps this would change if we gave more attention to learning a second language (or a third language and so on)..

In the Australian environment, the national government is attempting to put more energy into having students learn a second language in the school situation. Here natural resistance to a policy imposed from above could be offset by techniques of gamification, which could enhance the motivation of students to complete tasks. For example, by breaking down the larger learning task into small components, such as reading a single sentence and grasping the meaning, an intrinsic reward is provided to the learner, "promoting feelings of success and competence," as the authors say.

The classroom situation is important in building and maintaining students' motivation, thus providing a context for learning a second language, especially where that motivation is not inherent in the learner from the start. This is particularly important where there is not an underlying "desire to interact with other communities." In such a situation, the gamification aspects of our app could be of considerable assistance in maintaining motivation, or at least in reducing the influence of competing distractions. It also provides a means of measuring success, with test scores being recorded through the process.

Age of Acquisition

The question considered by Robert DeKeyser "Age effects in second language learning" is whether age of acquisition of the second language disadvantages the older learner. He was not convinced that this element is as important as generally considered, although he cites evidence that pronunciation is better if the second language learner is younger than 12 years of age. Where children are heavily involved in second language culture, their implicit learning of that language will have a very large impact on their long-term fluency in that language. However, where the style of learning of the second language has to be explicit rather than implicit, it is not true that younger is better. This is an encouragement to older learners to use the explicit instruction methods of our app for learning vocabulary, and the implicit approach provided in the app for learning syntax, by observing and rehearsing the pre-prepared stories.

Fossilization

ZhaoHong Han "Fossilization - A classic concern of SLA research" noted that about 95% of second language learners stop short of achieving "native-speaker competence." Leaving aside pronunciation, this appears to be an act of the will of a second language learner who is content to remain at a lesser level. As a result, she argues that the learner's second language becomes "fossilized" at a particular point in regard to one or more elements of the language. In other words, the learner's language becomes a "permanently stabilized interlanguage form," in the sense that "interlanguage" represents a melding of the first language and the second language, particularly in the area of syntax and meaning.

Yet both these aspects should be open to implicit self-correction through the exposure to a large range of native-speaker material, both in oral and written forms.

In regard to pronunciation, it is quite understandable that second language learners stop at the point where they can understand and be understood. The resilience of the native-speaker Scottish accent is a case of pride in one's origins; the strength of the French accent in some individuals is another example of being fluent in English, but not speaking like a "native." For most second language speakers, it should be enough to be able to successfully communicate while making correct word choices and correctly forming sentences. That, in itself, is hard enough.

Conclusion

It would appear that computer software of the type provided in our app should meet the things that software can do, based on the above examination of the current state of research on second language acquisition. With an emphasis on explicit learning of vocabulary and basic grammar plus implicit learning of syntax, such software could fit into a classroom environment quite well.

The app currently includes Learning Spanish from English, Learning French from English, Learning English from Chinese. The major shortcoming of our present offering at the moment is the lack of sufficient stories in the "Learning from English" sections, and the lack of academic research papers in the "Learning from Chinese" section. The app will eventually cover more Language pairs, as resources and more importantly, linguists in other language pairs, become available. If anyone is interested in contributing, or wishes to use the app to aid their research agenda, please contact me on +612 9688 7664 during working hours (9 am to 5 pm, Eastern Australian time) to discuss further.

Bibliography

The Routledge Handbook of Second Language Acquisition (ed. Susan M. Gass and Alison Mackey; London, 2012).