Eerste hulp bij tweede taal: experimentele studies naar woordenschatdidactiek voor jonge tweede-taalverwervers
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Summary

**First Aid for Young Second-Language-Learners**
Research into an effective method for increasing vocabulary among young second-language-learners

**General background**

Many immigrant children in the Netherlands attend school knowing fewer words than their Dutch-speaking peers. As a consequence these immigrant children are less able to comprehend the instruction and verbal communication in kindergarten and in the higher grades. Because vocabulary knowledge is one of the strongest predictors of second-language-learners’ reading achievement and of overall school success, such children are at risk for learning difficulties. National data confirm that there is a large gap between the language performance of Moroccan and Turkish kindergartners and the Dutch native speakers of their age. Although over the last five to six years this gap has narrowed, progress is slow and a gap remains throughout schooling, resulting in low rates of performances at the end of primary school.

It is government policy to enhance the (second-)language development of immigrant children at a very young age, even from two-and-a-half years old, by taking measures to encourage these students to participate in pre-school and early-years education (Early Childhood Education: *Voor- en Vroegschoolse educatie* – VVE) that work with specific educational programs. These programs should ensure a high quality of language input and well-structured didactics performed by qualified teachers. However, the desired effect of the measures cannot be proved unambiguously, partly because implementation of the programs was not optimal and the teachers were not faithful to the curriculum, partly because these programs are not well enough adapted to young beginners in second-language acquisition and don’t offer enough explicit instruction on vocabulary acquisition.

Given what is now understood about the early appearance of a vocabulary gap between students from immigrant background and native speakers, it is imperative to
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begin adding systematically to students’ vocabularies at an early age. The present study was conducted to determine effective instructional techniques to assist young second-language-learners in acquiring early vocabulary.

**Literature overview**

In chapter two an overview of the relevant studies on vocabulary acquisition of young children is presented. Research on second language acquisition indicates that several factors can facilitate the learning of new words in a second language. The role of frequency of exposure seems to be important, as well as the way the meanings of the words are presented. However, most research is mainly conducted with adults as participants and it is relatively rare to find research in second language acquisition that deals specifically with young second-language-learners. Studies in which young children participated suggest that *interactive reading* or *dialogical reading* can enhance language development and vocabulary growth. These educational techniques consist of several elements, such as repeated exposure of read-aloud texts and asking questions so that the children’s attention is focused on the new words. Some recent studies aimed at finding what specific components of reading aloud contribute to positive outcomes of children’s vocabulary growth. They found that children learn more words when they hear explanations of the words during the reading aloud. When the explanations are rehearsed over several days or the reading aloud is followed up by additional activities with objects, more words are acquired. Other studies provided evidence for the beneficial role of animation and repetition of digital storybooks. There are studies that reveal differential results on word learning for multimedia and rich explanation of words by second-language-learners and by native speakers. Almost all studies confirm the important role of repeated exposure of target words for children as well as for adult second-language-learners.

Research on vocabulary acquisition in the first language can provide insights on the factors that facilitate vocabulary development in young second-language-learners. For this reason chapter two also contains an overview of literature on word learning in the first language. Studies that utilize behavioral methods or event-related potentials (ERPs) show that from a very early age infants have some ability to recognize characteristics of sounds and utterances in their native language. In fluent speech words are not isolated from one another. Consequently, young children have to learn how word boundaries are marked in their first language. Between six and nine months, infants discover how fluent speech can be segmented, and they can use this ability to recognize words in on-going speech. They are then confronted with the “reference problem,” which means that the
reference of a new word must be established within a context that is often not clear about the meaning of the words. There is evidence that young children are helped in solving the segmentation problem and the reference problem by certain elements in the language input of their mothers, the “motherese” or caretaker’s language. One of these elements is the high frequency of words. In the first stages of language development, the average frequency of new words in the caretaker’s language input to toddlers is very high, on average almost 30 times in an observation hour, and related to the first use of these words by the children. As to the mode of input, researchers have shown that naming of objects and input of isolated words help children in word learning.

At the end of chapter two, we sum up the following aspects of language input that seem to facilitate vocabulary growth of young children: high frequency of exposure, large quantity of language input; rich explanations of word meanings; animation in digital stories; visual context; activities with objects; and repeated word exposure over time. In the studies on first-language development, the input of isolated words was found to be beneficial in early vocabulary growth, but was not mentioned in any of the second-language studies. As it is not yet clear which of these factors specifically contribute to early vocabulary development of young second-language-learners, it seems important to isolate these elements and establish which of them can facilitate young second-language-learners’ vocabulary growth by experimentally manipulating how new words are presented.

The experiments

The aim of the present study is to explore the facilitating effect of several elements of word presentation for acquisition by young children, including the influence of frequency of exposure, the mode of input, the context in which the words are presented, and the role of distributed exposure compared to massed exposure. Three experiments were conducted to investigate which pedagogy most facilitates the acquisition of words by pre-schoolers in the early stages of their second-language development.

Chapter three describes the first experiment in which 89 four-year-old children participated. They were pupils from eight primary schools in the western part of the country. Their average age was 52.5 months. This experiment was focused on the role of frequency of exposure and mode of input. Four experimental groups were distinguished with respect to frequency and mode of input: (1) isolated words of moderate frequency, (2) words in on-going speech of moderate frequency, (3) isolated words of high frequency, and (4) words in on-going speech of high frequency. Moderate frequency was defined as
a total of six times and high frequency as a total of 21 times. All children were randomly allocated to a control group or one of the four experimental groups. A computer program was developed for the learning of 20 target words, all object names. In the computer program the referents of the words were depicted in a clear, noticeable way, and each picture was animated at the same moment the relevant word was uttered. In this way the visual context presented the referents of the words as unambiguously as possible. The experimental groups watched this program three times on three successive days (mass exposure), while the control group watched another program without the target words. The groups were compared with respect to the number of newly acquired words directly after the program, as well as two weeks later. The results revealed that input of isolated words and high frequency of exposure make significant contributions to passive word learning.

In a second experiment, reported in chapter four, the learning of the same 20 words in a task-based activity was compared with learning words through picture story reading in a classroom setting. There were 106 participants, with an average age of 53.7 months, who were pupils from five primary schools with the same background as the schools of the first experiment. Twenty teachers were involved in this experiment. The pictures from the story were the same as those used in the computer program. The referents of the target words were used as objects in the task-based activity. To ensure faithful implementation of the activities, the teachers were trained and given written instructions about how to read the story and explain the words, and for the task-based activity a written script was developed. Before and after the program the children were tested on the acquisition of the words in the same way as in the first experiment. The results did not reveal any significant differences between the task-based condition and the read-aloud condition, but the task-based condition appeared to be more time consuming than the reading aloud activity.

The outcomes of the first and the second experiments were compared, and in chapter five the results of this comparison are reported. In the first experiment the children could not interact with the program, but had to listen passively. In contrast, the teacher activities in the second experiment gave ample opportunity to interact with the students. For example, the teachers gave explanations of the words during the reading aloud, pointed to the pictures, and asked questions to highlight the target words. In the task-based activity the teachers also explained the words and encouraged the students to react. To evaluate the effect of this interactive way of presenting the words, the results of the teacher activities were compared with the results of the computer program. 
When reading aloud by the teacher was compared with reading aloud by the computer, no significant differences were revealed. However, a comparison of reading aloud by the teacher and the presentations of isolated words by the computer yielded positive results for the computer program. In the second experiment the teacher activities were only performed once, and in the first experiment the computer program was presented three times. A second comparison was done comprised of presenting the computer program three times, which was compared with the combination of one teacher activity and a presentation of the computer program only twice. This comparison revealed no significant differences. So this study established that the children’s vocabulary growth was facilitated equally well by teacher interactive reading aloud and a task-based activity followed by two repetitions of the computer program as by a triple presentation of the words through the computer alone. This result casts doubt on the role of interaction in facilitating word learning by young second-language learners. In the first experiment exposure of the words was concentrated within a period of one week (mass exposure), but in the second experiment, repetition of the words was distributed over a period of three weeks (distributed exposure). The comparison of the results of this distributed exposure with those of the mass exposure did not reveal significant differences.

To evaluate the effect of similarity between test format and the format of the experimental program, a third experiment was conducted in which the same 20 words were presented as in the first and second experiments. This experiment is reported in chapter six. Four primary schools were asked to assist in the study, in which 73 children participated with an average age of 52 months. For the assessment of learning of the words, a test was developed containing 20 sentences instead of 20 items of one word only, as in the test used in the other experiments. The two high frequency versions of the computer program of the first experiment were used, namely, the version with isolated words and the version with words in on-going speech. The children were randomly assigned to one of these two conditions. The acquisition of the words of both groups was evaluated by a new vocabulary test with the sentences. In this way the facilitating effect of the similarity of program format and test format could be examined. The results revealed that the similarity between the format of the program and that of the test did not influence the test scores. This experiment also confirmed that the computer program with the isolated words was better at facilitating word learning than the program with the story.
Conclusion and discussion

In chapter seven the results of the three experiments are discussed and conclusions are drawn for the way new words are to be presented to young second-language-learners. The three experiments revealed that the following factors facilitate vocabulary growth for young second-language learners:

1. high frequency of exposure;
2. input of isolated words;
3. repetition of the target words over time.

The study did not reveal an advantage of the task-based condition over the interactive reading condition or vice versa. No influence was found for the similarity of the format of program or format of test.

In the discussion the greater results of the program with isolated words was related to the segmentation problem. Second-language learners may have more difficulty in segmenting on-going speech into words than native speakers, because native speakers use many clues to discern word boundaries, and these clues may not be available to the same extent or at the same speed of processing to non-native speakers. The participants in this study were young children in the first phase of their second-language development, and especially for them the segmentation problem could be a major obstacle in discerning new words in on-going speech. An input of words that are not presented in the context of sentences, but as isolated words, may help them distinguish the words very quickly so that they can give their full attention to solve the reference problem and keep the new words in their memory. In that way the input of isolated words not only helps children overcome the segmentation problem, but is also helpful for finding the referent.

The high frequency of 21 times was more effective than the frequency of six times. This was not an unexpected result, as in other studies the important role of frequency has already been confirmed. However, 21 exposures was a much higher number than can be found in studies on second-language acquisition to date. The effectiveness of this high number can be related to the high frequencies that have been found in the observations of caretaker's language for young children learning their first language. Therefore, the conclusion is warranted that in oral input to second-language learners, especially those that are in the early phases of their second-language development, new words should be presented with a much higher frequency than is usual in second-language programs.

With a great number of second-language-learners entering schools each year, language-intervention programs should meet the needs of these children. To enhance young second-language-learners' vocabulary, these programs should present new words
of high frequencies within a visual context that presents the referents in a clear and unambiguous way. This study found no effects of interactive reading and suggests that a presentation of isolated words can solve the segmentation problem for children in their first phases of second-language development. This does not mean, however, that reading picture stories could not be beneficial for second-language vocabulary acquisition, but the use of picture books should meet important conditions to be helpful for young second-language-learners, such as a high frequency of target words, clear and unambiguous pictures, and repeated exposures over time.

Future research should explore which other aspects of language input can enhance vocabulary development in a second language. In this study only object words were selected to be learned. Other experiments should be conducted to establish the factors that facilitate acquisition of words that are not easily depicted, such as abstract nouns and adjectives. It is important to note that the computer program with isolated words in a high frequency that was used in this study was highly effective, but did not last more than six minutes for each presentation. The aspect of time is important, as the students have to learn new words more quickly than native speakers. To find out which didactics are most beneficial to word learning and efficient in relation to time and organization, future research could aim at the effects of combinations of presenting and rehearsing words in computer programs and teacher activities. In that way more aspects of effective didactics for young children learning Dutch as a second language can be added to the elements found in this study.