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Breadth of Vocabulary and Advanced English Study: An Empirical Investigation

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Abstract

Worldwide, foreign language instruction – particularly EFL instruction – starts at increasingly earlier ages and takes up more space in the overall primary and secondary school curricula. The question is: Do long sequences of study necessarily lead to higher proficiency levels among students, particularly with respect to advanced competencies in receptive and productive skills, including academic language skills? As breadth of vocabulary has been identified as one of the most important indicators of reading proficiency and of academic language skills more generally, the present study focuses on vocabulary gain over eight years of English language instruction in secondary schools in Sachsen, a state in Eastern Germany. The study shows that even extended sequences of English instruction of eight years and more do not necessarily enable students to meet vocabulary thresholds for academic purposes. Even vocabulary goals such as in Sachsen that lie at the lower end of the ones suggested by research are met by very few students. Particularly the productive goals are missed by a wide margin. In addition to describing the vocabulary levels attained by the participants, the paper discusses the relationship between test scores and background data such as length of time spent in English-speaking countries, number of English language books read per year, study strategies, etc.

1 Introduction[1]

As English has become the *de facto* language of science and commerce, more and more non-English speaking countries start English instruction earlier in their pupils' lives, make English language courses compulsory for increasingly broader segments of their societies, and expand their offerings of subject-matter courses taught exclusively in English for non-English majors at university level. Even if the language of university instruction is not English, it has become increasingly unavoidable that the majority if not all of the reading assignments are in English. One important question in this respect is: How many years of English do pupils need at elementary and secondary school levels to be proficient enough for college subject-matter instruction in English? A related question is: Are the prevalent teaching approaches – be they communicative or grammar-oriented – still appropriate for the increased demand for academic uses of English while studying at university within an English speaking context or while studying primarily from English academic texts? As the present study reveals, it is difficult to provide an answer to the first question without addressing the second. Even more importantly, the study seems to suggest that, indeed, today's goals and methods – even in extended sequences of study of up to eight years – should be rethought in the light of the increased demand for academic English language skills for increasingly larger segments of society[2].

The following study deals with one aspect of university study within an English language context, i.e., reading large quantities of academic texts. An important predictor of efficient reading, and of academic success in general, is vocabulary size (Laufer & Sim, 1985; Qian, 2002).

Estimates of minimal vocabulary sizes needed for academic purposes start at a low of 5,000 words for reading authentic texts (Laufer, 1997) and range up to 10,000 words for reading university textbooks (Hazenberg & Hulstijn, 1996). Nation (2001) argues that at least 97% of the vocabulary of a text need to be known to gain adequate understanding of the text. To read literary texts extensively with understanding and relative ease, 98% of the words of the texts need to be known (Hirsh & Nation, 1992; Hu & Nation, 2000). Native English speaking children consider a vocabulary load of 2 unknown words per 100 words (98% known) difficult reading (Carver, 1994). 2 words per 100 words translates into roughly 1 unknown for every 5 lines of text read. In addition, reading strategies such as inferring unknown words from context do not appear to transfer from native language to foreign language until vocabulary thresholds that result in a text coverage of at least 97% of known words have been met (Laufer, 1997).

According to Carroll, Davies and Richman (1971), the 2,000 most frequent English words account for approximately 80% of the running words in a longer text and the 5,000 most frequent words for roughly 90% of the words. To gain coverage of 95% of a text – still shy of the above threshold of 97% – one needs to know some 12,000 words. To be sure, there are other intervening variables such as the fact that about 5% of the words of an academic text consist of technical vocabulary, with each subject containing roughly 1,000 word families (Nation, 2001), or the fact that there is a vocabulary, called academic vocabulary or subtechnical vocabulary, which consists of 570 word families and covers almost 10% of an academic text (Coxhead, 2000). Still, in order to master the amount of reading required by a typical university degree program, it seems imperative to have a large vocabulary consisting of perhaps 5,000 to 10,000 words.

A relatively recent study (Nurweni & Read, 1999) with a large sample of first year students at one Indonesian university found that their average English vocabulary knowledge consisted of 1126 words and that very few students came close to the the threshold of 3000-5000 words. The study reported in this article focuses on students studying English language and literature in Germany. In Germany, the most important requirement for enrolling in a degree program is the *Abitur*, a secondary school degree similar to the British *A-levels*, which pupils receive after 12 years of school including 8 years at the *Gymnasium*, the most difficult of the three secondary school options German children have. In the state of Sachsen, the state in which the study was undertaken, approximately 30 percent of an age group attend *Gymnasium*. At the time of the study, English instruction started at grade 5, the first grade of Gymnasium. In grade 5, pupils have five hours of English; in grades 6 and 7, four hours; in grades 8-10, 3 hours each; and in grades 11 and 12, five hours in intensive courses (Leistungskurse) and three hours in basic courses (Grundkurse). Thus, pupils who choose the intensive option in grades 11 and 12, have a combined total of 1280 classroom hours (of 45 minutes each) of English instruction in eight years of *Gymnasium*[3].

Vocabulary goals for grade 10 are a productive vocabulary of 3000 words and a receptive vocabulary of 4000 words. Vocabulary goals for the English *Abitur* which entails that pupils choose intensive courses in grades 11 and 12 are a productive vocabulary of 4000 words and a receptive vocabulary of 5000 words (Sächsisches Staatsministerium für Kultus, 2001). The *Abitur* goals thus seem to be in line with the minimum vocabulary levels for academic purposes suggested by research although it is likely that a larger receptive vocabulary may be necessary for the target population of students of English language and literature. Reading lists for students of philology tend to be extensive. The reading list of the English department at the University of Leipzig consists of over 200 works of literature, about half of which is supposed to have been read within the first two years (Seidel, 2000). If students were to read all of these works during their course of study, this would amount to roughly 50 books per year. According to Nation (2001), native speakers of English learn about 1000 new words per year mostly through reading. He suggests that in order to learn 1000 words per year, people read about 1,000,000 words per year, or roughly, 10-12 novels or 25 copies of a magazine such as *Newsweek*.

In order to verify that beginning students of English language and literature are meeting the vocabulary thresholds for academic study as established by Laufer (1997) and others, Nation's

(2001) Levels Tests were administered to a large sample of first-semester students of English in the winter semester 2001/02 at the University of Leipzig, a large research university in Eastern Germany. In addition to the tests, students completed a questionnaire gathering relevant biographical information along with information regarding their exposure to English and to native speakers of English and their vocabulary study behavior.

2 Method

2.1 Participants

The sample of participants in the study (n = 142) was selected from the population of first semester students of English language and literature (n = 355) in the winter semester of 2001/02 at the University of Leipzig. The sample represented 40 percent of the entire population of first semester students of English. A questionnaire filled out by each participant revealed the following characteristics: 84 percent of the participants were female, 16 percent were male. The students were between 18 and 27 years of age, the average age was 20. 53 percent of the students were in-state students from the state of Sachsen, another 22% were from the two adjacent states of Sachsen-Anhalt and of Thüringen, only 22 percent were from former West German states. All participants had German as their native language and had completed their primary and secondary schools in Germany. All of them had passed their *Abitur* (A-levels), the prerequisite to enroll at university. The students had between 5 and 11 years of English, the average was 8 years (SD 1.0). All students participated voluntarily in the study.

2.2 Tests

Nation's Levels Tests (2001) were used to gauge students' receptive and productive vocabulary levels.[4] The receptive vocabulary levels tests consist of four general vocabulary tests establishing vocabulary levels of 2000, 3000, 5000 and 10,000 words each, and of a special vocabulary test, the test of the Academic Word List (AWL), determining knowledge of words used frequently in academic writing beyond the first 2000 words (Coxhead, 2000). According to Nation (1990), the 2000 and 3000-word levels contain the high-frequency words that all learners need to know to read unsimplified texts; the 5000-word level represents the upper limit of general high-frequency vocabulary that is worth spending time on in class; and the 10,000-word level covers the more common lower-frequency words of English. The AWL consists of 570 word families, i.e., base words and their derivations through prefixation and suffixation. It is a list of general academic vocabulary developed to help students in reading their textbooks and other academic reading material. According to Coxhead (2000), the AWL covers around 10 percent of the words found in an academic text.

The receptive tests involve word-definition matching. Test takers are required to match the words to the definitions. The four general vocabulary tests consist of 60 words and 30 definitions, the AWL test consists of 72 words and 36 definitions, in groups of six and three respectively, as in the following example from the 10,000 word-level test:

1	alabaster		
2	chandelier	.....	small barrel
3	dogma	.....	soft white stone
4	keg	.....	tool for shaping wood
5	rasp		
6	tentacle		

Figure 1: Item block from the receptive Vocabulary Levels Test

The productive vocabulary levels tests[5] also consist of four general vocabulary tests of 2000, 3000, 5000, and 10,000 words each, and of another special vocabulary test, a test based on the University Word List (UWL), a somewhat older academic word list covering words used frequently in university textbooks beyond the first 5000 words (Campion & Elley, 1971). The productive tests consist of sentences including a blank. Test takers are required to write the missing target word in each blank. A variable number of initial letters are provided for each blank to ensure that only the target word correctly fits. The productive levels tests consist of 18 items each as in the following example from the 10,000 word-level test.

1. The insect causes damage to plants by its toxic sec_____.

In addition to the 10 receptive and productive levels tests, a receptive 1000 word test also taken from Nation (2001) was included in the study. Because of the large number of test items (a total of 280), the 11 subtests were distributed over 8 forms in such a way that each participant only completed five of the subtests. In each form, the subtests were arranged in differing sequences to reduce bias resulting from fatigue. For example, the R2000 test (receptive 2000) was the first subtest in form A, the fifth subtest in form C, the fourth subtest in form F, etc. Because it was assumed that the subtests 2000 through 5000 together with the tests of the AWL and the UWL would yield the most interesting results for the target population, the various forms included these tests more frequently than the 1000 and the two 10,000 word tests. Five forms contained the subtests R3000 and P3000 (productive 3000) and four forms contained each of the other target subtests. Two forms contained the 1000 word test and only one form contained each of the 10,000 word tests. Due to their limited numbers, the latter three tests will not be included in the present analysis. The Levels Tests were accompanied by a 25-item questionnaire focusing on relevant biographical information including past and present English language experience and study behavior.

2.3 Data collection

The Vocabulary Levels Tests and the questionnaire were administered to students in a large introductory lecture on English literature six weeks after the beginning of the winter semester. A total of 167 students participated in the test. The tests of 25 of the students were not included in the present analysis because they did not have German as their native language, did not have the German *Abitur*, or were not in their first university semester. The 8 forms of the test were distributed in such a way that students sitting next to each other worked with different forms. The questionnaires were attached to the tests and were filled in after completion of the test. It took students 26 minutes on average to complete their five subtests; the fastest student took 15 minutes, the slowest 42 minutes.

3 Results

In this chapter, selected results from the questionnaire will be presented first. Then, the results of the vocabulary levels tests will be presented. In the final section of the chapter, four research questions focusing on the relationship between vocabulary levels and selected biographical variables will be addressed.

3.1 Questionnaire Data

An analysis of the questionnaire data reveals that many students do not seem to be properly prepared for university study in English, nor do they seem to be good language learners. More than half of the students appear to take little interest in the English language, its literatures and its

people.

	1	2	3	4
Speaking (1 = none, 2 = partner, 3 = friends, 4 = family)	68%	7%	29%	4%
Speaking time (1 = none, 2 = 1, 3 = 6, 4 = 6+ hours/week)	68%	20%	8%	4%
Writing (1 = none, 2 = partner, 3 = friends, 4 = family)	68%	8%	28%	2%
Scholarly books (1 = none, 2 = 2, 3 = 5, 4 = 5+ per year)	31%	36%	29%	4%
Non-fiction (1 = none, 2 = 2, 3 = 5, 4 = 5+ per year)	71%	18%	7%	4%
Required literary works (1 = none, 2 = 2, 3 = 5, 4 = 5+ per year)	46%	18%	28%	8%
Fiction (1 = none, 2 = 2, 3 = 5, 4 = 5+ per year)	26%	24%	35%	15%
Scholarly articles (1 = none, 2 = 2, 3 = 5, 4 = 5+ per year)	70%	11%	11%	8%
Newspapers (1 = none, 2 = monthly, 3 = weekly, 4 = daily)	64%	34%	2%	0%
Feature films (1 = none, 2 = monthly, 3 = weekly, 4 = daily)	49%	48%	2%	1%
TV News (1 = none, 2 = monthly, 3 = weekly, 4 = daily)	31%	49%	15%	5%
Radio (1 = none, 2 = monthly, 3 = weekly, 4 = daily)	78%	17%	3%	2%
Internet (1 = none, 2 = monthly, 3 = weekly, 4 = daily)	53%	0%	37%	10%
Study/Life abroad (1 = none, 2 = up to 1, 3 = up to 3, 4 = up to 12 month)	23%	35%	13%	20%
Vocabulary study (1 = none, 2 = mark, 3 = lists, 4 = flash cards)	41%	48%	30%	10%

Table 1: Selected questionnaire data

As Table 1 shows, 68% of the students neither speak English outside of their classes nor do they communicate in writing; 7% speak English with their partner; 29% speak with their friends; and 4% speak with family members. 68% do not speak English at all outside their classes; 20% speak less than 1 hour per week; 12% speak more than 1 hour per week. 31% of the students do not read any scholarly books; 36% read up to two scholarly books per year; 29% read up to 5 and 4% read more than five scholarly books per year. 71% do not read non-fiction books; 46% do not read any of the literary works listed on their reading list; 70% do not read any scholarly articles in English. 64% do not read any English language newspapers; 34% read English language newspaper a few times per month. 49% do not watch English language movies; 31% do not watch English news on TV; 78% do not listen to English language radio; and 53% do not read English language Internet pages. 23% of the students have never been to an English-speaking country; 35% stayed less than a month; 13% visited for up to three month; and 30% for up to 12 months. 41% of the students do not study vocabulary; 48% mark unknown vocabulary in their readings; 30% work with vocabulary lists; and 10% study vocabulary using flash cards.

Despite eight years of English instruction in school, more than half of the participants in this study do not seem to have acquired any good vocabulary learning, or indeed, language learning habits. The next section will focus on the question how large their vocabularies are.

3.2 Vocabulary Levels

In the state of Sachsen, receptive vocabulary goals for the English *Abitur* are 5000 words, productive goals are 4000 words. To leave some room for performance errors, the passing rate for each test was set at 90%. This meant that students could make three errors in the receptive and 1.5 in the productive tests and still pass the test. Table 2 shows the number of students participating in each test and the percentage of students who pass each test with a passing rate of 90%. It also shows the percentage of students passing each test with a passing rate of 80%. A passing rate of

80% allows students to make six errors in the receptive tests and three in the productive tests and still pass the test. In addition, table 2 shows the average percentage of words known for each test, the minimum and maximum number of words known and the standard deviation (SD). Note that the test of the AWL follows the receptive 2000 test and the test of the UWL follows the productive 5000 test as discussed above (s. chapter 2.2)

	N	*90%*	*80%*	*Mean*	*Minimum*	*Maximum*	*SD*
R2000	87	78%	94%	92.5	66.7	100.0	6.9
AWL	72	47%	76%	86.1	52.7	100.0	10.9
R3000	87	28%	50%	77.8	46.7	100.0	15.0
R5000	72	21%	30%	69.9	26.7	100.0	18.6
P2000	89	22%	53%	77.8	19.4	100.0	15.6
P3000	90	2%	8%	51.7	16.6	94.4	18.4
P5000	71	0%	1%	32.5	0	80.6	16.2
UWL	72	0%	1%	49.5	0	83.3	16.6

Table 2: Number of participants in each subtest; percentage of students passing at passing rates at 90% and 80%; mean, minimum, maximum, and standard deviation for each subtest in percent

With a passing criterion of 90 percent, 78% of the students pass the receptive 2000 test; 47% the AWL; 28% the receptive 3000; and 21% the receptive 5000. With a passing rate of 80 percent, 94% of the students pass the receptive 2000 test; 76% the AWL; 50% the receptive 3000; and 30% the receptive 5000. Even with the less stringent criterion of 80 percent, only 30% of the students reach *Abitur* goals (5000 words receptively) and the minimum receptive vocabulary level needed for academic purposes. Applying the more stringent criterion of 90 percent, 70% of the students know less than 3000 words receptively; half of the students have not mastered the AWL; and 20% even have problems with the most frequent 2000 words.

On the productive side, again with a passing criterion of 90 percent, 22% of the students pass the 2000 test; 2% pass the 3000 test; and nobody passes the productive 5000 and the UWL test. With a passing criterion of 80 percent, 53% of the students pass the productive 2000 test; 8% the productive 3000; and 1% the productive 5000 and the UWL. This means that at least 92% (P3000 at 80 percent) do not even come close to reaching *Abitur* goals (4000 words productively) or the minimum productive vocabulary level needed for academic purposes. After 8 years of English instruction, between 50 and 80 percent of the students depending on criterion have not mastered the most frequent 2000 words in English.

3.3 The relationship between vocabulary levels and biographical data

The last section of this chapter deals with the relationship between the subtests and the relationship between vocabulary levels and selected biographical data testing the following hypotheses:

1. The results of the subtests form an implicational scale, i.e., students know more words as they move down the levels.
2. Students who read more have a larger receptive vocabulary.
3. Students who speak more have a larger productive vocabulary.
4. Students who study vocabulary have larger receptive and productive vocabularies.

Hypothesis 1: Subtests form an implicational scale

Hypothesis 1 concerns the predictive validity of the levels tests, specifically the question if students who do well on higher levels also do well on lower ones. If, for example, a student passes the R3000 test at 90%, does he also pass the R2000 tests at 90%? While it may be possible to study only the third thousand most frequent words and do better on those than on the second thousand words not studied, during the course of learning a foreign language, particularly when using the foreign language in listening, reading, speaking, and writing, the law of frequency would imply that more frequent words come up more frequently and thus are learned more likely than less frequent ones.

Table 3 presents the Pearson product-moment correlation among the receptive tests on one hand and the productive ones on the other. The first two columns show the tests that are being correlated, the third column shows the number of observations and the fourth column shows the value of the correlation. Note that the number of observations is lower than the number of subtests because students did not take all eight subtests but rather five each. Thus, of 87 students who took the subtest R2000, only 51 of those also took the subtest R3000. As table 3 shows, all correlations are significant, all of them at $p < .05$ and three of them at $p < .001$. Subtests that are further apart such as R2000 and R5000 ($r = .52$) and P2000 and P5000 ($r = .60$) correlate moderately highly; subtests that are close together such as R3000 and R5000 ($r = .80$), P2000 and P3000 ($r = .79$), and P3000 and P5000 ($r = .75$) correlate highly. The hypothesis that higher results at higher levels indicate higher results at lower levels, therefore, is supported by the present results.

		Number of observations N	*Pearson's r*
R2000	R3000	51	.56*
R2000	AWL	36	.77*
R2000	R5000	17	.52**
R3000	AWL	17	.74*
R3000	R5000	53	.80*
R5000	AWL	36	.81*
P2000	P3000	37	.79*
P2000	UWL	52	.64*
P2000	P5000	17	.60**
P3000	UWL	19	.56**
P3000	P5000	53	.75*
P5000	UWL	36	.64*

Table 3: Correlation between subtests. $^{*}p < .001$. $^{**}p < .05$.

Hypothesis 2: Receptive vocabulary size and reading

Two measures of reading were calculated: the total number of books read per year and the frequency of reading English language newspapers. The numbers provided by students for scholarly books, fiction and non-fiction books, required literary books (at 100%), scholarly articles (at 25%), plays and books of poetry (at 50%) were summed up. Students claimed to read a total of 10 books per year on average (mean: 10.3, min.: 0, max.: 60, SD 10.1). Students were, then, divided in two groups: students who declared that they did not read anything in English and those that said they did; students who maintained that they read up to four books per year (a third of the participants) and those who said that they read more; and, finally, those who stated that they read

up to 10 books per year (half of the participants) and those who claimed to read more. T-tests were calculated between these groups for each of the receptive subtests.

Subtest	*Groups*	*N*	*Mean*	*SD*	*Difference of Means*
R2000	No books	9	88.1	11.0	4.8*
	Books	78	93.0	6.2	
AWL	No books	6	75.0	17.6	12.2*
	Books	66	87.1	9.7	
R3000	No books	11	66.7	13.0	12.7*
	Books	76	79.4	14.6	
R5000	No books	10	58.7	15.7	13.1*
	Books	62	71.7	18.5	
R2000	Up to 4 books	32	90.4	8.5	3.2*
	More than 4 books	55	93.7	5.6	
AWL	Up to 4 books	16	81.4	15.0	6.1*
	More than 4 books	56	87.5	9.2	
R5000	Up to 10 books	39	65.2	17.3	10.4*
	More than 10 books	33	75.5	18.7	

Table 4: T-tests: Receptive subtests and total number of books read. $^{*}p < .05$.

Table 4 presents the results of the T-tests. For all four receptive tests, there are significant differences between students who do not read any books and those who do. In addition, for the subtests R2000 and AWL, there are significant differences between students who read up to four books per year and those that read more. For subtest R5000, finally, there are significant differences between students who read up to ten books per year and those who read more.

For subtest R2000, the difference of means between students who do not read any books in English and those that do is 4.8 percent, i.e., students who read English books received 4.8 percent more points on their tests on average than those that do not. The difference of means is quite substantial for subtests AWL (12.2), R3000 (12.7) and R5000 (13.1). Between students who read up to four books and more than four, the difference of means is significant for subtests R2000 (3.2) and AWL (6.1), and between students who read up to ten or more books, it is significant for subtest R5000 (10.4). As expected, at the lower levels the difference of means is significant between up to four books and more than four, while at the highest level, it is between up to ten books and more than ten. The biggest and most consistent differences, however, occur between students who read books and those that do not.

Subtest	*Groups*	*N*	*Mean*	*SD*	*Difference of Means*
R2000	– Newspapers	57	91.0	7.3	4.2*
	+ Newspapers	30	95.2	5.1	
AWL	– Newspapers	41	83.7	11.7	5.6*
	+ Newspapers	31	89.3	9.0	

Table 5: T-tests: Receptive subtests and reading newspapers. $^{*}p < .05$.

The second measure of reading was the frequency of reading English language newspapers. Of the four possibilities: daily, weekly, monthly, and never, only the difference between readers and non-readers proved to be significant. As table 5 shows, T-tests between students who do not read English language newspapers and those that read a newspaper at least a few times per month yield significant differences ($p < .05$) at the lower subtests of R2000 and AWL. The differences of means for R2000 were 4.2% and for AWL 5.6%.

In summary, the hypothesis that there is a significant correlation between the amount of reading students complete and the size of their receptive vocabularies is supported by the present study, particularly with respect to the number of books read per year (for all subtests under consideration) but also for the lower levels with respect to reading newspapers.

Hypothesis 3: Productive vocabulary size and speaking

Again, two measures were calculated: oral communication opportunities in English outside of class and length of residence in English-speaking countries. As table 6 shows, T-tests between students who state that they do not speak English outside of class and those who said they do reveal significant differences ($p < .05$) for subtests P2000 and P5000 with large differences of means: for P2000 a difference of 7.4% and for P5000 a difference of 9.7%. It is not surprising that the subtest UWL, a measure of written vocabulary, does not correlate significantly with speaking outside of class. The absence of a significant difference at the level P3000 remains unexplained. In addition, there were no significant differences between students who speak up to one hour per week, up to six hours per week, and more than six hours per week. This may be due to the fact that there were few students who speak between one hour and six (8%), and more than six (4%). In addition, the reason for students not trying to speak English outside of class may be due to a lack of motivation and/or second language self-esteem. Therefore, the important variable may not be how much students speak outside of class but rather if they speak at all, i.e., actively search for oral communication opportunities outside of class.

Subtest	*Groups*	*N*	*Mean*	*SD*	*Difference of Means*
P2000	– Speaking	59	75.3	17.2	7.4*
	+ Speaking	30	82.7	10.4	
P5000	– Speaking	49	29.5	15.2	9.7*
	+ Speaking	22	39.1	16.9	

Table 6: T-tests: Productive subtests and speaking outside of class. $^{*}p < .05$.

The second measure of speaking opportunities was the length of residence in English-speaking countries. For this measure, the students were divided in two groups: participants who had stayed in English-speaking countries for up to four months (the mean for all participants) and those who had stayed more than four months. As table 7 shows, T-tests reveal significant differences between these two groups for all productive tests except for the UWL.

The differences of means between groups are very substantial for all three tests: close to 10% for P2000, over 15% for P3000 and over 17% for P5000. These data strongly support the connection between a residence of at least four months abroad and the size of the productive vocabulary. It is not surprising that there are no significant differences between groups for the subtest UWL for at least three reasons. First, the UWL consists of words beyond the most frequent 5000 words; second, these words are primarily used in writing; and third, the contexts in which these words are acquired are very special (academic writing) and not usually part of a residence abroad.

To summarize, the hypothesis that there is a significant correlation between speaking opportunities and the size of the productive vocabulary is strongly supported by the present study, espe-

cially as far as the variable "residence in English-speaking countries" is concerned but also for the variable "oral communication opportunities outside of class"[6].

Subtest	*Groups*	*N*	*Mean*	*SD*	*Difference of Means*
P2000	Up to 4 months	63	75.0	16.5	9.7*
	More than 4 months	26	84.6	10.4	
P3000	Up to 4 months	63	47.2	15.6	15.3*
	More than 4 months	27	62.4	20.2	
P5000	Up to 4 months	52	27.8	13.0	17.3*
	More than 4 months	19	45.2	17.6	

Table 7: T-tests: Productive subtests and residence in English-speaking countries. $^{*}p < .001$.

Hypothesis 4: Vocabulary study and vocabulary size

The hypothesis that vocabulary study is significantly correlated with the size of students' receptive and productive vocabularies was not supported by the study. There were no significant differences between students who study vocabulary and those that do not for any of the eight receptive and productive subtests under consideration. There may be several reasons for this. First, the questions concerning vocabulary study may not have been chosen well enough to yield useful data; second, the groups may not be clearly different from each other (some of the students who mark unknown vocabulary in their texts may belong to the group that does not really study vocabulary whereas others may write them down in lists or on flash cards); and third, some or perhaps many of those students who claim to study vocabulary may not do so effectively or even frequently enough to make much of a difference.

4 Discussion

The present study seems to suggest that most beginning English language and literature students are not really prepared for their university studies with respect to the size of their receptive and productive vocabularies and with respect to their language acquisition strategies. Particularly the size of their receptive vocabulary does not seem to be up to task when considering the large amount of reading they have to complete (about 50 literary works per year). 79% of the students do not have the receptive vocabulary of 5000 words as expected for the English *Abitur* in Sachsen and considered to be a minimum for reading academic texts; 72% do not have a receptive vocabulary of 3000 words.

One of the reasons for the relatively small size of their receptive vocabularies after eight years of English at school seems to be the little time students spend reading English. 71% do not read any non-fiction books; 70% do not read any scholarly articles; 64% do not read any newspapers; 46%, indeed, do not even read books from their reading list. This apparent lack of interest in reading English may be attributed to the fact that very little is read in school. During their first six years in secondary school (grades 5-10), students read only one single short story in addition to the readings in their textbooks. Pupils who take intensive English in grades 11 and 12 read one book per year and those who take non-intensive English classes read only one book in this two-year period (Sächsisches Staatsministerium für Kultus, 2001).

As many studies including the present study show, the amount of reading is highly correlated with receptive vocabulary growth. The difference in the mean scores of students who read English and those who do not is a substantial 12% to 13% for the receptive 3000, the receptive 5000, and

the academic word list (AWL). Addressing the paucity of reading in school, therefore, appears to be an urgent first step to increase students' preparedness for university study.

Considering the fact that 87% of the students had 8 or more years of instruction (mean years of instruction 8.1, SD 1.0), that 70% of them had intensive English instruction (*Leistungskurse*) in grades 11 and 12, and that they belong to a self-selected group choosing to study English language and literature for a career, the results these students achieve in the productive tests are very disappointing. Only 2 percent pass the productive 3000 word level, the level that is claimed to be the goal of 10th grade. And, a whopping 79% fail the productive 2000 word level. What are the reasons for this unhappy state of affairs? The following reasons are suggested by the study:

Few students use English productively in speaking or writing outside their classes. 68% do not use it at all, another 20% (for a total of 88%) speak English less than 1 hour per week. Few students seem to make a solid effort to study vocabulary. Only 10% maintain that they use flash cards. The remainder either seems to use less effective methods such as marking words in texts or making word lists or does not study vocabulary at all (41%). This may point to another shortcoming of secondary school foreign language instruction: the absence of a focus on vocabulary learning past the first few years combined with an absence of teaching effective vocabulary learning strategies.

Another reason for the dismal results in productive vocabulary knowledge may have to do with the lack of in-country experience in English-speaking countries for many students. A surprising 23% of the students never visited an English-speaking country, 35% visited for up to one month, and 13% for up to three months. A number of studies provide evidence that substantial gains in vocabulary may be attributed to study abroad experiences (DeKeyser, 1991; Lennon, 1990; Walsh 1994). Milton and Meara (1995) report that German, French, Italian and Spanish learners of English in a study abroad context averaged a 23% growth in vocabulary in six months. The growth was most robust among learners who initially were between the 2500 and 4500 word levels. They claim that the subjects in their study appeared to be gaining vocabulary at a rate of over 2500 words per year and that they learned EFL nearly five times faster on average during their exchange than they did taking classes at home.

The present study also found significant large differences in vocabulary knowledge between students spending up to four months and more than four months in English-speaking countries for all productive tests excluding the UWL (P2000: 9.7%; P3000: 15.3%; P5000: 17.3%)[7]. As reported in note 6, the study found equally important differences between students for the receptive levels[8]. This seems to indicate that residence and study abroad may be the single most important factor determining vocabulary size for students in extended sequences of study.

5 Conclusion

The results of this study point to a number of problems in English language instruction at the secondary school level, at least in the state of Sachsen, but perhaps in other states and countries as well. These problems may have major implications for university study, particularly for subjects in which there is a large amount of reading materials in English and/or courses in which English is the language of instruction. Even extended sequences of English instruction of up to eight years do not necessarily enable students to meet vocabulary thresholds for academic purposes. Even vocabulary goals such as in Sachsen that lie at the lower end of the ones suggested by research are met by very few students. Particularly the productive goals are missed by a wide margin. There seem to be a least two main reasons for this unhappy state of affairs. On the one hand, there seems to be a big gap between the amount of reading pupils should accomplish and between how much they actually read. On the other hand, many secondary schools do not appear to do a sufficiently good job in teaching vocabulary and vocabulary learning strategies, especially after the first few years of language instruction.

In the state of Sachsen, students do not need to read more than a single short story in addition

to what they read in their textbooks in their first six years of English instruction. If they opt for the non-intensive option in grades 11 and 12, they read one novel; if they choose the intensive option, they read one novel and one play. If Nation's (2001) estimate that native speakers read about 10-12 books per year to acquire 1000 words is correct, then one or two books in eight years does not seem to be more than the proverbial drop in the ocean. Rather than spending an inordinate amount on grammar as is often the case in foreign language classrooms, schools might be better served by introducing extended reading programs such as the ones suggested by Day and Bamford (1998). Nation and Wang Ming-tzu (1999) report that reading one graded reader per week – out of a total of 42 graded readers at six different levels over the course of one year – led to sufficient encounters of words to be learned. Horst, Cobb and Meara (1998) found that a carefully controlled book-length reading treatment resulted in more incidental word learning and a higher pick-up rate than previous studies with shorter tasks. They also found that students with larger vocabulary sizes had greater incidental word learning gains.

In addition, it appears that schools and universities need to focus more on vocabulary learning and vocabulary learning strategies. The culture clashes between proponents of grammar-oriented and communicative approaches still prevalent in many schools in many countries may have been most detrimental to the study of vocabulary. Grammar folk spend too much time on grammar to have much available for anything else including vocabulary while communicative folk may have thrown out the vocabulary baby with the grammar bathwater. Modern notions of the importance of frequency in vocabulary learning and of special vocabularies such as the academic word list (AWL) as well as of the importance of vocabulary learning strategies often have not yet found their way into education ministries, curriculum boards, teachers and teacher trainers. Finally, while extended reading programs seem to be an important prerequisite for the acquisition of a large and capacious vocabulary, there is increasing evidence that direct vocabulary learning is important even for advanced students because of significant differences between native speakers and advanced learners in noticing, guessing ability, the guessing retention link, and cumulative gain (Laufer, 2003). Laufer (2001) reports that reading supplemented with direct vocabulary learning activities led to better results than reading alone. This seems to indicate the value of spending both classroom and homework time with direct learning of the most frequent three to five thousand words of the language to be learned in addition to gaining multiple experiences with these words in reading, listening, speaking, and writing.

Notes

[1] I am indebted to Birgit Meerholz-Härle, Volkmar Munder and Stefanie Neuner for their help in this study and to Olaf Bärenfänger for many helpful comments.

[2] In 2003/04, German universities for the first time enrolled over 2 million students totalling 40% of their respective age group, the stated goal of the German government; in the U.K, the goal is enrolling 50% of each age group.

[3] There are 40 weeks in a German school year. Eight school years equal a total number of 32 hours per week. 40 * 32 = 1280.

[4] See Cameron (2002) and Read (2000:117-126) for a discussion of Nation's Levels Tests.

[5] Two versions of the Productive Levels Tests by Nation and Laufer have been adapted for the WWW by Tom Cobb and may be found under http://www.er.uqam.ca/nobel/r21270/levels/.

[6] Length of residence in English-speaking countries plays an equally important role for the receptive subtests. Again with the exception of the subtest AWL, T-tests reveal significant differences ($p < .001$) between students spending less than four months and those spending more than four months abroad. The difference of means for the subtest R2000 is 5.3%, for R3000, it is 13.5%, and for R5000, it is a whopping 19.6%.

[7] In addition to 4 months, other cut-off points between groups of students also lead to significant differences. For example, there are significant differences for students spending less than 30 days and more than 30 days for P2000 (7.2%, $p < .05$), P3000 (9.8%, $p < .05$), and P5000 (10.8%, $p < .001$) and between students spending less than one year and more than year for P3000 (27%, $p < .05$) and P5000 (25.4%, $p < .05$).

[8] In addition to the results reported in note 6, there are significant differences between groups spending up to 30 days and more than 30 days in English-speaking countries for the subtests R3000 (12.5%, $p < .001$) and R5000 (17.4%, $p < .001$), and between groups spending up to one year and more than one year for subtests R3000 (19%, $p < .001$) and R5000 (25.6%, $p < .001$).

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