ACADEMIC READING EXPECTATIONS IN ENGLISH FOR FIRST-YEAR
STUDENTS AT HACETTEPE UNIVERSITY

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ABSTRACT

ACADEMIC READING EXPECTATIONS IN ENGLISH FOR FIRST-YEAR
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This study explored the Academic reading needs of first-year students from the perspective of content course teachers in English-medium departments at Hacettepe University. The study was conducted with 35 content course teachers and 99 first-year students in English-medium departments at Hacettepe University in the spring semester of 2005.

Three sets of data were used for this study. First, a questionnaire was distributed to 35 first-year content course teachers and interviews completed with 18 of the teachers who returned the questionnaire. In addition, samples of required textbooks were collected from the same first-year content course teachers as well as reading samples from the textbook and the final exam in the Prep school. A

vocabulary test was given to 99 first-year students in English-medium departments to determine a baseline measure of their ability.

The purpose of the questionnaire administered to first-year content-course teachers was to determine teachers' academic reading expectations for first-year students. The questionnaire consisted of Likert scale items. The follow-up interviews provided insight into teachers' perceptions, experiences and practices related to their academic reading expectations of first-year students. Reading samples from the first-year content courses were collected to specify the precise reading expectations of the content teachers. Reading samples from the final exam and the textbook of the Prep School were collected to determine the exit expectations from the Prep School. The vocabulary test was done to explore the vocabulary levels of the first-year students.

To analyze the data, mean scores, percentages and frequencies were used in the questionnaire; a coding system was used in the interviews; Flesch-Kincaid readability test and Vocabulary Profiler were used for analyzing the reading samples and the prep exit exam. To determine the students' levels of vocabulary knowledge, Nation's (1990) guideline was used. The interviews were conducted with 18 content course teachers who completed the questionnaire. The results reveal that all content course teachers agree on the necessity of being a proficient reader in order to be successful in content courses. Content course teachers also agree that the academic reading curriculum should be revised to include using texts which are taught in content course departments.

Based on these results, adjusting the current curriculum in accordance with the expectations of content course teachers is recommended, particularly in the area of more academic vocabulary training. Another recommendation is to adopt an adjunct

model approach to link content courses and language courses thereby providing

students with both content and language study simultaneously.

Key words: Needs Analysis, English for Academic Purposes, Discipline specific

English teaching, Academic Reading, Curriculum Development, Adjunct Model.

ÖZET

HACETTEPE ÜNİVERSİTESİ BİRİNCİ SINIF ÖĞRENCİLERİNDEN
INGILIZCE AKADEMIK OKUMA BEKLENTİLERİ

Eroğlu, NihanAylin

Yüksek Lisans, Yabancı Dil Olarak İngilizce Öğretimi Bölümü

Tez Danışmanı: Dr. Susan S. Johnston

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Bu çalışma, Hacettepe Üniversite'sindeki İngilizce bölümlerdeki öğretim görevlilerinin bakış açısından birinci sınıf öğrencilerinin okuma ihtiyaçlarını araştırmıştır. Çalışma 2005 bahar döneminde, İngilizce öğretim veren bölümlerde birinci sınıf derslerine giren 35 öğretim görevlisi ve 99 birinci sınıf örencisiyle gerçekleştirilmiştir.

Çalışma için üç çeşit veri toplanmıştır. İlk veri, birinci sınıf derslerine giren 35 öğretim görevlinse verilen anket, ve bu anketi dolduran 18 öğretim görevlisiyle yapılan görüşmelerdir. Ayrıca, birinci sınıf derslerinde okutulan okuma örneklerinin yanı sıra, ve hazırlık bölümünde okutulan okuma örnekleri ve 2001 final sınavı

örneği de toplanmıştır. 99 birinci sınıf öğrencisine çeşitli kelime seviyelerini ölçen

bir test verilmiştir.

Bölümlerde birinci sınıflara ders veren öğretim görevlilerine verilen anketin

amacı, bu öğretim görevlilerinin birinci sınıf öğrencilerinden bekledikleri okuma

seviyesini belirlemektir. Anket Likert ölçeğinde düzenlenmiştir. Anketin ardından

yapılan görüşmeler bu öğretim görevlilerinin görüşleri, tecrübeleri ve uygulamalarına

yer vermektedir. Birinci sınıflara ders veren öğretim görevlilerinden toplanan okuma

metni örnekleri, öğretim görevlilerinin tam beklentilerini belirlemek amaçlıdır. 2001

Hazırlık final sınavı ve okutulan kitaptan alınan okuma metni örnekleri de Hazırlık

çıkış beklentilerini belirlemek için toplanmıştır. Kelime seviyesi tespit sınavı da

birinci sınıf öğrencilerinin çeşitli kelime seviyelerini tespit etmek için verilmiştir.

Verileri incelemek için ankette ortalamalar, yüzdelik ve sıklık değerleri;

görüşmelerde kodlama sistemi; okuma metni örnekleri ve 2001 final sınavının

okunabilirlik seviyesini ve kelime analizini yapmak için Flesch-Kincaid

Okunabilirlik Analizi ve Vocabprofiler; birinci sınıf öğrencilerinin kelime

seviyelerini tespit etmek için Nation'un düzenlediği Kelime Seviyesi Tespit Sınavı

kullanılmıştır. Görüşmeler anketi dolduran 18 öğretim görevlisiyle yapılmıştır.

Sonuçlar, birinci sınıf bölüm derslerine giren öğretim görevlilerine göre öğrencilerin

bölüm derslerinde başarılı olabilmeleri için başarılı okuyucular olmaları gerektiğidir.

Ayrıca, bölümlerde okutulan metinlerin Akademik Okuma Becerileri dersinde

kullanılması gerektiği hakkında da görüş birliğine varılmıştır.

Bu sonuçlara dayanılarak, Akademik Okuma Becerirli dersinin programının

akademik kelime öğretimine daha çok ağırlık verecek şekilde birinci sınıf bölüm

derslerine giren öğretim görevlilerinin beklentileri doğrultusunda yeniden

düzenlenmesi önerilebilir. Diğer bir öneri de, dil ve bölüm derslerinin bir arada öğretildiği "bileşik modelinin" Hacettepe Üniversitesi'nde kullanılmaya başlanmasıdır.

Anahtar Kelimeler: İhtiyaç Analizi, Akademik Amaçlar için İngilizce, Bölümlere göre İngilizce Öğretimi, Akademik Okuma, Program Geliştirme, Bileşik Model.

ACKNOWLEDGEMENTS

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CHAPTER I: INTRODUCTION

Introduction

Academic reading is an important academic skill both for native speakers and foreign or second language learners studying in universities. Yet, for foreign or second language learners in the EFL university context, academic reading is challenging. In the EFL context, English for Academic Purposes (EAP) aims to help non-native English speaking students acquire the necessary academic skills to enable them to manage the workload in their academic lives. Most university students, regardless of their background, struggle with the vast amount of reading required in each course. Academic reading ability is, therefore, particularly important in EAP as it equips students with the necessary strategies and techniques for an efficient reading process.

In academic reading, students read for specific purposes. Students may first read quickly to find relevant sections for their needs, then read these identified sections carefully. Academic reading attaches great importance to effective reading strategies such as scanning to find specific information, skimming to get the gist and reading important passages carefully. In addition, to support effective academic reading, English preparatory programs need to develop vocabulary-building exercises in each student's field.

Despite the importance of Academic Reading in the EFL context, if the curriculum of an Academic Reading course is not designed according to the needs of the students, then the chance of success is rather low. Determining students' needs, thus, becomes an important step in EAP programs. Conducting a comprehensive needs analysis in which relevant information is gathered and interpreted can identify the gap between the current status of the students and the desired level (Graves, 2000). A Needs analysis identifies students' academic needs and thereby assists course developers in designing courses that accurately fit the identified, specific needs of the students. These carefully designed courses, then, can help students make progress in the desired direction.

This study is an analysis of academic reading needs of first-year students at Hacettepe University. First, content course teachers in 100% English-medium departments completed a questionnaire about their academic reading expectations. Then, some of these instructors were interviewed. In addition, the types of texts taught in first-year English-medium content courses at Hacettepe University were analyzed to determine the reading and vocabulary levels of these texts. In order to determine the actual vocabulary needs of students, vocabulary tests were given to the first-year students and the 2001 final exam and sample readings from the textbook *Interactions 2,* from the Preparatory School were collected for analysis. The results of this analysis will help the teachers in Post-preparatory English courses prepare the students according to the expectations of the content course teachers.

Background of the Study

Reading is an important skill for students learning English as a second or foreign language, particularly in an academic context. The ability to read effectively

is as important as speaking well. The significance of reading increases in academic English contexts especially for students studying at English-medium universities in which vast amounts of academic materials in English are used in every course. One fundamental characteristic of an academic reading course is that "when students read, it is for a *purpose*" (Jordan 1997). Academic reading courses expect students to have defined purposes while they are reading. These purposes include obtaining specific information, understanding ideas, discovering authors' viewpoints or looking for information to support students' points of view.

Academic reading also requires certain strategies and skills. Some of the major skills and strategies are skimming (reading quickly to understand the main idea), scanning (reading quickly to find specific information) and prediction. Other strategies include distinguishing between relevant and irrelevant information, recognizing both explicit and implicit information, as well as important and less important ideas. Understanding graphic presentation, understanding text organization and relationships between and within sentences and finally recognizing discourse/semantic markers and their functions are important strategies for academic readers (Jordan, 1997).

The syllabus for an academic reading course is, therefore, prepared by taking into consideration three questions: What is needed, why it is necessary, and how it is going to be taught. Answering these questions requires a careful needs analysis to determine "the goals, content and approaches to teaching and learning" (Johnston, 2003).

Needs analysis is an essential part in curriculum development and, as correctly put by Richards (2001), "a sound educational program should be based on an

analysis of learners' needs." Curriculum development refers to the processes that are used to determine the needs of a group of learners; to develop aims and objectives for a program to address those needs; to determine an appropriate syllabus, course structure, teaching methods and materials; and to carry out an evaluation of the language program that results from these processes. (Richards, 2001). Needs analysis can be defined as "basic activities that will serve as the basis for developing a curriculum that will meet the learning needs of a particular group of students" (Brown, 1995). Gathering information about the students' needs helps us state those needs as goals and objectives, which also improves tests and materials, teaching activities, and evaluation strategies used in a course. Needs analysis is, therefore, an indispensable part of systematic curriculum building.

Nunan (1998) divides needs into two categories, "felt (subjective) needs and perceived (objective) needs." Felt needs arise from the expectations and demands of individual learners. Perceived needs arise from the understanding of teachers, administrators or other stakeholders. Both types of needs are equally important and should be taken into consideration in organizing a thorough needs analysis.

A thorough needs analysis requires a systematic process, including interviews, questionnaires, discourse analysis and observation within the target academic context. The results of a comprehensive needs analysis are useful for determining what is needed to meet the specific learning needs of the students.

Statement of the problem

Academic reading is an essential skill for success in EAP contexts as reading is a language skill that can help the students in their academic lives. A reading curriculum must consider the actual needs of the students. At Hacettepe University

Post-preparatory English Department, first year students from English-medium departments are all required to take the academic reading course. However, a lack of knowledge about the actual reading requirements and expectations in the content courses in English-medium departments cause some problems related to the designation of the curriculum and, as a result, the preparation of the exams.

At Hacettepe University, curriculum design and testing of the academic reading course, which is viewed as being one of the most important English support courses, has been conducted by taking experience and anecdotal advice into consideration without identifying the actual reading needs of the students in their own departments. Because of the fact that there has not been any study at Hacettepe University specifically identifying students' academic reading needs, we do not know the actual expectations of content course teachers for reading in the English-medium departments. Teachers and course developers in the Post-preparatory English Department need to be aware of the type of texts taught in the English-medium departments so that the courses can be tailored according to the needs of the students in the classes and so that the students can be prepared for the expectations of the departments.

This study, therefore, aims to conduct a needs analysis of the academic needs of post-preparatory students at Hacettepe University. This needs analysis was conducted by collecting, analyzing and interpreting questionnaires on academic reading expectations, which were distributed to content course instructors in 100% English-medium departments. Interviews with eighteen of these instructors were also carried out. Second, the texts taught in first-year English-medium content courses at Hacettepe University were collected and analyzed to determine the reading and

vocabulary levels expected of the students. Third, vocabulary tests were given to the first-year students to determine the actual vocabulary levels of the students, and reading samples from the textbook and the 2001 final exam from the Preparatory School were collected to be used as a baseline for the students' vocabulary level at the end of the preparatory program and before beginning the first-year courses. The results of this study will help to inform course developers and test writers in the program about the needs of the students, particularly the gap, if any, between the content course teachers' expectations in terms of academic reading and the students' actual level.

Research Questions

1. What are the reading requirements of the first year English medium content courses at Hacettepe University in terms of readability and vocabulary levels?

2. What differences exist in readability levels and reading demands across departments in the first year?

3. To what extent do the reading levels and vocabulary knowledge of students in the first year English-medium departments match the content course instructors' expectations?

Significance of the study

The lack of research in determining the needs of the students related to the academic reading course has caused several important problems in terms of curriculum design and testing at Hacettepe University Post-preparatory English Department. This study will benefit the teachers who are in charge of the preparation of the reading exams. Because teachers at the Post-Preparatory English Department will be informed about the reading and vocabulary levels of the students, they will

also be informed about the needs of the students in English-medium departments; thus, they will better prepare students for their future academic lives.

This study, although conducted in a particular context, can also contribute to future studies which will be made in this field by providing a general view of the needs of students for academic reading courses. It will also provide a model for future needs analyses to be conducted in other universities and academic contexts.

Key terminology

The following terms are used throughout the thesis, and therefore their definitions are given below:

Needs Analysis: A way of collecting data in order to design a curriculum that is appropriate for the needs of the learners.

EAP (English for Academic Purposes): Teaching English by focusing on the specific communicative needs and practices of particular groups in an academic context.

Discipline specific language teaching: Teaching English by taking into consideration the linguistic and cultural differences of disciplines.

Curriculum development: Focuses on determining what knowledge, skills, and values students learn in schools, what experiences should be provided to bring about intended learning outcomes, and how teaching and learning in school or educational systems can be planned, measured and evaluated (Richards, 2001).

Vocabprofiler: A software program that analyzes the number of words that the text contains from the following four frequency lists (Nation, 2001):

- The list of the most frequent 1000 word families (K1),
- The second 1000 (K2),
- The academic word list (AWL),
- Words that do not appear on other lists (Off-list words).

Readability level: A measure of the comprehensibility of understandability of a written text.

<div align="center">Conclusion</div>

This chapter gives the purpose and the background of the study, the statement of the problem, the research questions and the significance of the study. The key terms that are frequently seen throughout the thesis were also described.

The next chapter reviews the literature related to the purpose of this study. In the third chapter on methodology, detailed information on the participants of the study, the instruments used to gather data, the procedure to conduct the needs analysis, as well as information on data analysis will be explained. The fourth chapter discusses the data analysis. In the final chapter, findings will be discussed by making comparison between disciplines. Pedagogical implications from the findings will also be presented. Limitations of the study and recommendations for further research will be given in order to help other researchers interested in academic needs analyses.

CHAPTER II: LITERATURE REVIEW

Introduction

The purpose of this study is to conduct a needs analysis which includes analyzing sample texts taught in content-courses in English-medium departments at Hacettepe University. The study will also determine the vocabulary levels of first-year students in these departments. The results of the study will help the teachers at Hacettepe University, Department of Post-preparatory English prepare students in accordance with the expectations of the content-course teachers. This needs analysis includes a text and vocabulary analysis that carefully examines texts that are taught in the content courses of the English medium departments at the university. It also includes a vocabulary test given to the first year students to compare students' actual vocabulary levels with sample readings taken from the English preparatory courses of these departments. The analysis includes a discourse analysis in which texts are analyzed in terms of their readability levels, vocabulary frequency, rhetorical patterns and sentence structures. The results of the study will inform course developers and test writers in the program about the needs of the students in their departments.

This chapter reviews the related literature on English for academic purposes (EAP), corpus linguistics, needs analysis and text analysis. In addition, various

studies including surveys and interviews that were conducted on academic literacy needs will be reviewed.

Teaching Academic Reading

English for Academic Purposes (EAP)

Reading is an important academic skill both for native speakers and foreign or second language learners in the university. Academic reading is especially important for students learning English as a second or foreign language. The importance of reading increases in academic English especially for students studying at English-medium universities where they are required to search, analyze, synthesize and integrate the information with other skills in their content areas by reading academic texts (Grabe & Stoller, 2002). Dealing with academic reading texts in an EFL environment is difficult for foreign or second language learners.

The term, English for Academic Purposes (EAP), was first officially used in 1974; in 1975, the published proceedings of the joint SELMOUS-BAAL Seminar at Birmingham University on "English language problems of Overseas Students in higher Education in the UK" were entitled as "English for Academic Purposes" (Jordan, 1997). In 1979, the first title in the Collins Study Skills in English appeared. In 1989, an increased professionalism in the teaching of EAP at university level was indicated by the re-naming of an older established group to the British Association of Lecturers in English for Academic Purposes in Britain (Jordan, 1997).

EAP specifically supports non-native English speaking students in acquiring the necessary academic skills that will enable them to handle effectively the workload in their academic lives. Most university students struggle with the vast

amount of reading required in each course. The students strive to gain fluency in the conventions of English language academic discourse to understand their fields and conduct their leaning (Hyland & Hamp-Lyons, 2002). Academic reading is, therefore, particularly important in EAP as it equips students with the necessary strategies and techniques for an efficient reading process. Academic reading helps students use appropriate skills and strategies to facilitate comprehension (Silberstein, 1994).

Academic reading also requires certain strategies and skills. Some of the major skills and strategies are as follows (Jordan, 1997):

- skimming (reading quickly for understanding the main idea)
- scanning (reading quickly to find specific information) and
- predicting
- distinguishing between relevant and irrelevant information
- recognizing explicit and implicit information
- differentiating important and less important ideas.
- understanding graphic presentation,
- understanding text organization and relationships between and within sentences and
- recognizing discourse/semantic markers and their functions.

As can be seen, reading is an important skill for academic success in preparing the curriculum of the reading course, and in meeting students' needs, goals, language abilities (Celce-Murcia, 2001). Another important factor for academic success in reading is knowledge of the specific language used in academic contexts. In the following section information about corpus linguistics and how it has been applied in isolating academic vocabulary will be presented.

Corpus Linguistics and Vocabulary in EAP

Corpus linguistics has emerged as an important area for linguists. Computer memory and sorting powers have enabled researchers to compile, categorize and analyze large amounts of language data (Biber, 1998). "Corpus", is used to refer to large collections of texts, which represent a sample of a particular variety or use of language(s) that are presented in machine-readable form (Hunston, 2002). There are many different kinds of corpora. They can contain written or spoken (transcribed) language; modern or old texts; texts from one language, or several languages. The texts can be whole books, newspapers, journals, speeches, academic textbooks or consist of extracts of different lengths. The kind of texts included and the combination of different texts vary between different corpora and corpus types (Hunston, 2002).

'General corpora' consist of general texts, texts that do not belong to a single text type, subject field, or register. An example of a general corpus is the British National Corpus. Some corpora contain texts that are sampled (chosen from) a particular variety of a language, for example, from a particular dialect or from a particular subject area. These corpora are sometimes called 'Sub-language Corpora' (Biber, 1998).

Corpus linguistics is the study and analysis of data obtained from a corpus. The main task of the corpus linguist is not to find the data, but to analyze it. Computers are useful, and sometimes indispensable, tools used in this process. Constructing vocabulary frequency lists is one important task of some applied linguists using academic corpora.

Vocabulary frequency is an important consideration in EAP and academic reading. Many researchers have tried to discover an average number of words that a person needs to know to understand everything in science. For the answer to this question, West (1953) formed General Service List (GSL) of English Words including the 2000 most useful word families in English. For example, "the" is the most frequent word with a frequency level of 69,975 in the GSL. This list has been very important for many years as it serves as the basis for graded readers as well as other materials. GSL is also important for academic reading because further studies about academic texts have shown that the GSL covers almost 80% of the words in academic texts (Coxhead, 2000).

There is other corpus-based research that investigates the vocabulary needed for academic studies. Xue and Nation (1984) edited a university word list (UWL) that consisted of 836 word families that occurred frequently in academic texts in various fields at university level. Xue and Nation's university word list serviced about 8.5% coverage of academic texts that is considered important for students. In order to find general academic words for every study field, Coxhead (2000) compiled a corpus that includes about 1,400,000 running words and composed an academic word list (AWL) that consists of 570 word families. He found that his AWL presented nearly 10% of the all words in general academic texts. Coxhead's AWL has more coverage of academic texts than Xue and Nation's UWL.

The word families of the Academic Word List (AWL) were selected according to several principles. In order of importance, range is the first selection principle (Coxhead, 2000). The AWL families occurred in the Arts, Commerce, Law

and Science faculty sections of the Academic Corpus. A full listing of the subject

areas in the Academic Corpus are presented below in Table 1.

Table 1

Subject areas in the Faculty Sections of the Academic Corpus (Coxhead, 2000)

Arts	Commerce	Law	Science
Education	Accounting	Constitutional Law	Biology
History	Economics	Criminal Law	Chemistry
Linguistics	Finance	Family Law and Medico-Legal	Computer Science
Philosophy	Industrial Relations	International Law	Geography
Politics	Management	Pure Commercial Law	Geology
Psychology	Marketing	Quasi-Commercial Law	Mathematics
Sociology			

The word families also occurred in over half of the 28 subject areas of the

Academic Corpus. Just over 94% of the words in the AWL occur in 20 or more

subject areas. This principle ensures that the words in the AWL are useful for all

learners, no matter their area of study. The second principle is frequency. The AWL

families had to occur over 100 times in the 3,500,000 word Academic Corpus in

order to be included in the list. The third principle is uniformity of frequency. The

AWL families had to occur a minimum of 10 times in each faculty of the Academic

Corpus so that they could be included in the list. This principle ensures that the

vocabulary in the AWL is useful for all learners in an academic context.

The academic word list (AWL) covers an additional 10% of the total words

found in academic texts. Thus, it would also be useful for EAP learners to know

these words. If an EAP learner masters GSL and AWL together, this will cover

approximately 90% of the academic vocabulary studied. As well as learning the GSL

and the AWL, EAP students also need to know specific words related to their fields

such as the special terminology in science and technology, law or in political science.

These words make up the remaining 5% to 10% of the total words in an academic

text, and are called "off-word lists" (Nation, 2001). Thus, mastering both GSL and AWL makes up an important role for university students as all of the texts they are required to read will use words from these lists to a great degree.

In this section information about what corpus linguistics is and how it is used in determining vocabulary lists were presented. Information about needs analysis types, methods, instruments and approaches and which type of needs analysis will be used in this study will be presented in the following section on needs analysis.

Needs Analysis

Needs analysis is an essential part in curriculum development because an effective educational program should be based on an analysis of learners' needs (Brown, 1995; Nunan, 1988; Richards, 2001). The future needs of the learners and the teachers' expectations can be determined by conducting a needs analysis that will directly inform the curriculum.

Needs analysis is an approach to curriculum development introduced in the 1960s with English for Specific Purposes (ESP) and later in English for Academic Purposes (EAP). An important principle of ESP approaches to language teaching is using "the purposes for which a learner's needs a language rather than a syllabus reflecting the structure of general English should be used in planning English course" (Richards, 2001). An ESP approach starts with an analysis of the learners' needs, rather than developing a course around an analysis of the language. By the 1980s, a "needs-based philosophy in language teaching" emerged in relation to ESP and other vocationally oriented programs (Richards, 2001). However, before the introduction of needs analysis, many teachers who wanted to identify what their students needed to learn had already made use of informal needs analyses. One kind of data that can

be used as a tool for needs analysis is the results from a language proficiency test. Another type of information for a needs assessment can be gathered from a background questionnaire that asks where and for how long the students have had previous language learning, for example. A third example is impressions gained from teacher and student interviews about the students' cognitive and linguistic abilities, analysis of program documents and interviews with teachers (Brown 1995).

Definitions of Needs Analysis

Needs analysis has been defined by many researchers in the literature. Brown (1995), Pratt (1980) and Graves (2000) defined needs analysis as being a systematic and continuous process of gathering information about students' needs and preferences, interpreting the information and then making course decisions based on the interpretation in order to meet the needs. Gathering information about needs provides the foundation for goals and objectives, which can also help to improve tests and materials, teaching activities and evaluation strategies used in a course. Needs analysis is, therefore, an indispensable part of systematic curriculum development. Needs analysis refers to a selection of procedures (different information gathering tools should be used in conducting needs analyses) for identifying and "validating needs" (as needs are changeable) and establishing priorities among them (Brown, 1995). Once identified, these needs should be examined regularly for validity against the real needs of the students.

Approaches to Needs Analysis

Teachers' approaches to needs analysis are influenced by their personal philosophy and practical experiences. In his article, Brindley (1984) mentions a survey he conducted with 100 ESL teachers to investigate the feasibility of

implementing a learner-centered system in the Australian Adult Migrant Education

Program. According to the responses of the participants, Brindley (1989) makes a

comparison of the teachers' approaches to needs analysis. In the following table, a

sample from this comparison is provided (See Appendix I for the complete table on

comparison of approaches to needs analysis):

Table 2

Comparison of approaches to needs analysis (Brindley, 1989)

	"Language proficiency" orientation	"Psychological/humanistic" orientation	"Specific purposes" orientation
View of the learner	Learner as a language learner	Learner as a sentient human being in society with the capacity to become self-directing	Learner as a language user
View of needs	Objective needs stressed. Needs seen as gap between present and desired general language proficiency	Subjective needs stressed. Needs seen as gap between current state of awareness and state of awareness necessary for learner to become self-directing	Objective needs stressed. Needs seen as gap between present language performance in a specific area and language performance required in a particular communication situation
Emphases	Where the learner is in terms of language proficiency in one or more skills	Sensitivity to adults' subjective needs	Relevance of language content to learners' personal goals and social roles

For this study, both the "language proficiency" orientation and the "specific

purposes" orientation approaches to needs analysis were used. The reason for using

these two approaches was because this study aims to conduct a needs analysis to

discover the gap between the Preparatory School exit reading and vocabulary levels

and first-year students' reading and vocabulary levels in English-medium

departments. The analysis for this study includes analyzing samples from

introductory textbooks taught in content-courses in English-medium departments at

Hacettepe University. The study will also determine the vocabulary levels of first-

year students in these departments. The results of the study will help the teachers at

Hacettepe University, Department of Post-preparatory English better prepare

students in accordance with the expectations of the content-course teachers at the

appropriate level.

Needs Analysis within the Curriculum

Needs analysis involves a process of gathering information to find out how

much students already know and still need to learn. The curriculum process diagram

(Johnston, 2003) in Figure 1 below depicts all the elements that are interacting and,

therefore, should be taken into consideration in a language curriculum development

program.

Figure 1

Curriculum development process diagram (Johnston, 2003)
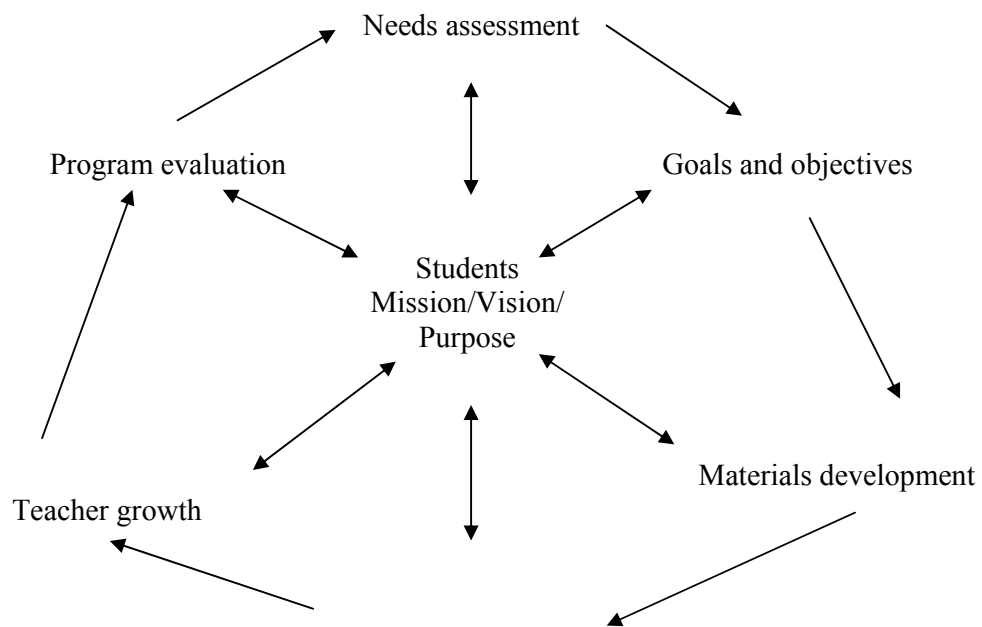
Tests and assessment

As can be seen in the figure, students, mission and the purpose in this schema are considered to be at the center of the curriculum development process. Another important feature of this figure is that all items are interacting with each other. This multi-directional interaction means that each item is influencing the impact of other items and that the success of one item depends on the success of another.

In order to perform a needs analysis, certain systematic steps are suggested, such as making basic decisions about the needs analysis, gathering information and using the information (J. D. Brown, 1995; Graves 2000). These steps are important as they will be used to decide what information to gather and why, to decide the best way to gather the information, to interpret the information, to act on the information, and finally to evaluate the effectiveness of the action.

Types of Needs

Needs have been presented in various ways in the literature primarily by taking into consideration three major perspectives: target needs, subjective needs (also felt needs), and objective needs (also perceived needs). First, target needs are the lacks and wants of the learners. Target needs answer these questions: "What is the gap?" and "What do the learners need to know?" The answers to these questions provide the basis for the course goals and objectives (Hutchinson & Waters, 1987). Second, subjective or felt needs refer to the personal factors that shape learners' perceptions and aptitudes towards language study (Tudor, 1996). Subjective needs are the needs that learners think that they need. Learners' thoughts, feelings and assumptions make up subjective needs. Finally, objective or perceived needs are the

needs that are determined by the observable data gathered about the situation. Data

for deciding objective needs can be gathered by evaluating the weak and strong

points of students. Beliefs of the teachers can also be important to determine the

educational gaps in the learners' experiences (Berwick, 1989).

<u>Goals of Needs Analysis</u>

Richards (2001) states the purposes for conducting needs analysis in language

teaching include the following:

- discover what language skills students need in order to perform a particular role. For example, "what are the language needs of a university student for language teaching?"
- determine if an existing course fully addresses the needs of potential students
- determine which students from a certain group most need training in particular learning skills
- identify a change of direction that people in a reference group feel is important
- identify a gap between what students are able to do and what they need to be able to do
- collect information about a particular problem learners are experiencing

In terms of language teaching, Graves (2000) believes that one of the most

important purposes of needs analysis is to define the purpose of a language course so

that it can be possible to determine what will be taught, how it will be taught and

how the course will be evaluated in the classroom.

<u>Methodology in Needs Analysis</u>

The first step to be taken is to determine the people who will participate in the

needs analysis. There are four categories of people who may be involved in a needs

analysis. The first one is "the target group" which refers to people about whom

information will be collected. Generally they are the students in a program. However, the target can also be policy makers, ministry of education officials, teachers, academics, vocational training specialists (Richards, 2001). The second group is the audience that includes all people who will eventually influence the analysis. This group usually consists of teachers, program administrators and governing bodies or supervisors in the bureaucracy above the language program (Brown 1995). The third group is the needs analysts, who are the members of the faculty or consultants brought together with the purpose of conducting the analysis. This group will probably be responsible for identifying the other two groups in the process. The fourth group is the resource group who may give information about the target group. Parents, financial sponsors, or guardians may be included as important sources on the target group (Brown 1995).

Instrument types

Procedures for collecting information in needs analyses include self-ratings, case studies, tests, observations, interviews, meetings, collecting learner language samples and questionnaires (Brown, 1995; Graves, 2000; Gupta, 1999; Richards, 2001). Each of these procedures will be discussed in more detail below.

Self-ratings include scales that students or other participants use to rate their own abilities or knowledge in certain areas. For example, a student may rate how well he or she can handle a job interview in English (Richards 2001). Case studies provide in-depth observations of a single learner's or a group of learners' educational experience in order to examine the characteristics of that situation. Richards (2001) gives an example of a case study as a newly arrived immigrant who has studied for three months. The study might discover the problems that he encounters. A case

study might also provide information complementary to the information that is provided from other sources.

Tests are important sources for needs analyses because tests can provide essential information about the general ability levels of the students, about possible ability groupings that will make sense within a program, about specific problems that students may be having with the language, and about their achievement in previous programs. (Brown 1995)

Observations can be used as another way of assessing the needs of the learners. Observations usually involve watching an individual or a small number of individuals and recording their behavior (Brown 1995). Observation, however, is a specialized skill involving knowing how to observe, what to look for, and how to make use of the information obtained as a result of the analysis (Richards 2001).

Interviews can take different forms such as the teacher interviewing the student(s), or the students interviewing each other, or the students interviewing the teacher, or a researcher interviewing the teacher (Graves 2000). Interviews allow for a more in-depth exploration of issues than is possible with a questionnaire, although they take longer to administer and are more suitable for smaller groups. (Richards 2001)

Questionnaires are one of the most common instruments used in needs analysis. Questionnaires differ from each other depending on their purposes. For example, biodata surveys are used to obtain information about the background of each of the participants. Such facts can include a student's age, place of birth, sex and marital status (Brown 1995).

In summary, before beginning a needs analysis, the first step is to determine the participants and the types of information to be gathered. The next step is to choose the most appropriate instruments which share three important characteristics: "reliability, validity and usability" (Brown 1995). If these steps are taken into consideration before starting to conduct a needs analysis, the results of the study will provide more useful data for the purpose of improvement.

In this section, information about needs analysis was presented. In the following section, detailed information about text analysis, steps in text analysis, and tools to analyze readability levels of texts will be presented.

Text-analysis

Generally, texts are read in order to understand meaning, and they are analyzed to discover how they communicate meaning to the readers. Close text analysis involves focusing on individual words, phrases, and syntax.

Texts are examined differently depending on the purposes of data collection. Although textual studies differ from each other in many ways, some common points exist in their analyses. In each analysis there should be some rules in determining the text which is going to be examined, and some standard set of coding decisions to be applied to the text (Roberts, 1997). In the following sections, information about some tools to analyze readability levels of texts will be presented.

Tools to analyze readability levels of texts

Readability is a measure of ease with which a given passage of text can be read and understood. The only complete way to test readability is to give people a passage to read and then follow up with a test to see whether they understood the text or not.

If a great number of people understand the passage, it may be generalized that many other people with about the same level of reading skills will understand it too. After finding a way to predict reading levels which will agree with how people actually score on standardized passages, one should also be able to predict how well they will understand other reading material of similar difficulty (Hunston, 2002). This is the rationale behind readability estimates.

Almost all readability tests use some measure of word difficulty (such as word length, syllable counts, and the number of unknown words) and syntactic complexity (such as the number of dependent clauses and average sentence length) as their main predictors. The most widely accepted or recognized software for readability analysis includes Fog index, Flesch-Kincaid Index, and Lexical Density Test. These three readability analyses are presented below.

The Fog index is a method of analyzing written material to see how easy it is to read and understand (Roberts, 1997). It uses the following formula in determining the readability levels of texts:

Reading level (US school level Grade) = (Average number of words in sentences/ Percentage of words of three or more syllables) x 0.4.

The "ideal" Fog index level is 7 or 8. A level above 12 indicates that the writing sample is too hard for the majority of people to read and understand. For example, *The New York Times* has an average Fog index of 11-12, while *Time* magazine is about 11. For technical documents, the level changes to between 10 and 15.

The Flesch-Kincaid Index is another readability test designed to show how easy or difficult a text is to read. This index determines the readability level of a text

based on the average number of syllables in each word and the average number of words in each sentence (Roberts, 1997). The Flesch-Kincaid uses the following formula:

0.39x average number of words in sentences+11.8x average number of syllables per word 15.59

The score in this index is interpreted by the US school grade level. For example, a score of 8.0 indicates that a person in sixth grade (ages 11-12) can understand this document. The average readability grade for Flesch-Kincaid is between grade seven and grade eight.

In the Flesch-Kincaid Index "reading ease" is defined as the measure of the comprehensibility and understandability of a written text. Flesch-Kincaid Reading Ease scores passages on a scale of 0 to 100. In this scale, lower numbers indicate difficult passages, whereas higher numbers indicate materials that are easier to read. The Flesch-Kincaid Grade Level Formula translates the 0-100 score to a U.S. grade level, and makes it easier for teachers, parents, librarians, and others to understand the readability level of various books and texts. The result is a number that corresponds with a grade level. For example, a Reading ease score of 80 would indicate that the text is understandable by an average student in 6th grade. Below is the table for Flesch-Kincaid reading ease score, grade level and difficulty levels.

Table 3

Flesch-Kincaid reading ease score, grade level and difficulty level

Reading Ease Score	Difficulty	Flesch Grade Level
0-29	Very Difficult	Post graduate
30-49	Difficult	College
50-59	Fairly Difficult	High school
60-69	Standard	8th to 9th grade
70-79	Fairly Easy	7th grade
80-89	Easy	5th to 6th
90-100	Very Easy	4th to 5th grade

(US Dept. of Education 1993. http://nces.ed.gov)

The readability levels of texts can be easily calculated by using the Microsoft Word Software Program. After Microsoft Word completes a grammar check (under tools in the tool bar), readability statistics for Flesch-Kincaid are displayed.

The Density Test is another readability test to indicate whether a text is easy or difficult to read. The Lexical density test formula is as follows:

Lexical Density = (Number of different words / Total number of words) x100.

The lexical density of a text measures the proportion of the content words to the total words. Texts with lower density are likely to be understood better.

Vocabulary analysis

VocabProfiler (VP) developed by Tom Cobb and based on Batia Laufer and Paul Nation's (1995) Lexical Frequency Profiler, is a computer program that performs lexical text analyses. This software program divides words in texts into four categories according to frequency: the most frequent 1000 words of English (K1=1000 level); the second most frequent 1000 words of English (K2=2000 level); the 550 most frequent academic words of English (AWL=550 words that are frequent in academic texts across subjects); and the remaining words which are not

found on the other word lists (Off-list words). In other words, VP measures the specific level of high frequency vocabulary used in a written text. This tool has been useful in understanding the lexical acquisition and performance of second language learners. Some research studies using the VP are presented below.

A study conducted by Laufer and Nation (1995) tests VP as a research instrument. The study first discusses problems related to other approaches to automatic measurement of lexical richness of texts, such as the type-token ratio analysis, which tries to identify the number of different words appearing in a text. However, Laufer and Nation (1995) conclude that the type token ratio analysis does not indicate anything about the frequency of the words, and its results are known to vary according to the length of the text. However, they agree that using VocabProfiler provides researchers with more reliable information about the text, as it also explores levels of high frequency words.

Another study done by Meara (1993) includes an evaluation of the lexical component of a popular BBC English course. Meara conducted a VP analysis of the BBC course and the results determined that essentially all the words learners would be exposed to came from the 0-1000 band of English. Thus, the VP can be used to determine whether or not a language sample is appropriate for a particular level of student.

One other interesting use of VP is to evaluate the suitability of reading texts for various levels of learners. For example, if a particular group of learners have mastered vocabulary at the 1000-2000 level, but have not mastered the words at the AWL level, then they might usefully read texts that present about 5% of their lexical

offering at the Academic Word List level. The AWL, then, can assist with the selection of reading material to support learning.

Another important use of VP is to shed light on the relationship between learners' passive and active vocabulary knowledge. In teaching vocabulary, it is important but difficult to distinguish between introducing and activating word knowledge. However, by using VP, active and passive word usage in a text can be determined.

Finally, students can also use VP to check on the range and density of their own vocabulary production. If students paste a text they understand into VP, they can compare their lexical profiles with native speaker texts.

In this section information about vocabulary analysis was presented with reference to other studies done by using the instrument Vocabprofiler that was used in this study. In the next section similar studies to this one will be mentioned.

Similar studies

One part of this needs analysis study is an analysis of the academic reading needs of students from the perspective of content course teachers. In the literature, most of the needs analysis studies were conducted to collect information to determine the needs of the students for other skills such as writing. Some studies, as in this study, explored needs by taking content course teachers' points of view into consideration, while others put English teachers and students at the center of the investigation. Several of these studies are presented below.

Horowitz (1986) investigated the writing needs of students at Western Illinois University in content courses. The study was conducted in an English as a second language (ESL) environment and the faculty members' opinions about students'

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academic needs were solicited. Cassanave and Hubbard (1992) conducted another needs analysis study in which they investigated writing requirements in ESL situations. The study was conducted at Stanford University and content course teachers from Humanities and Social Sciences and Science Technology Programs were surveyed. Johns (1988) investigated academic language skill needs of students in an ESL context at San Diego University. A questionnaire was given to the content course teachers to determine the language needs of the students. The results of the questionnaire analysis showed that both instructors and students felt that reading was the most important skill.

In Turkey, Nil Zelal Akar (1999) conducted a study investigating freshman reading course students' needs in the Development of Reading and Writing Skills (ENG 101) at Middle East Technical University (METU). Students' studies in content courses and their future careers were considered in the study. In order to gather data, three groups of participants were used, recent METU freshman reading students, METU graduates who currently held jobs and content course teachers. Results of the study indicated that freshman students' opinions about the course varied across departments. These students stated vocabulary studies as the most useful component of the course, whereas they stated that speaking was the least important. They also felt that reading was important for both in undergraduate studies and for future professions. Similarly, METU graduates ranked reading as well as speaking as the most needed skills for their jobs. All content course teachers indicated that reading was important for success in their courses; however, the teachers reported that the amount of reading varied across departments. Based on

these results some suggestions were made to improve the syllabus of the reading course.

Another study investigating the Academic English language needs of students was conducted by Cemile Güler (2004) at Yıldız Technical University through the perspectives of their content teachers. Data were collected from the content teachers currently working in eight different faculties at Yıldız Technical University. The results of the study revealed that most of the content teachers at Yıldız Technical University agree on the importance of English in the academic studies of learners. Nevertheless, when the results concerning the Academic English requirements of different disciplines were considered, 'reading' was shown to be the required skill given most priority.

Soner Arık (2002) conducted a wide study to investigate what the content course teachers of different departments at Niğde University require in terms of academic English. The study was conducted in order to improve the curriculum of English courses in accordance with the expectations of the content course teachers. Fusun Yazıcıoğlu (2004) from Hacettepe University, Department of Post-preparatory English courses investigated the academic writing needs of the students through the perspectives of content course teachers in two 100% English medium departments of Hacettepe University. This study was conducted in order to determine to what extent the English writing requirements of the students differ according to the expectations of the content course teachers from these two English-medium departments.

Needs analysis studies provide useful and practical information for program designers and teachers. As can be seen in all the studies above, several types of needs analyses have been conducted to discover the academic English needs of non-native

students. Because academic reading is a central part in EAP instruction, more studies are required to investigate specific academic needs.

Conclusion

In this chapter, an overview of the literature in English for Academic purpose (EAP), needs analysis, corpus linguistics, text analysis, and vocabulary analysis was presented. Needs analysis is an inseparable part of curriculum design, enabling the needs of the students and the expectations of the teachers and environment (context) to match. However, in order to conduct a sound needs analysis, deciding on the participants, the type of information to be gathered and the procedures to be carried out should be determined carefully. The next chapter will focus on the methodology, presenting the participants of the study, the instruments, and data analysis procedures used in the study.

CHAPTER III: METHODOLOGY

Introduction

This study is a needs analysis of content-courses teachers' expectations, and it aims to determine the gap between the current and the expected level of students in English medium departments at Hacettepe University by analyzing vocabulary and reading levels of these students to enable the teachers at Hacettepe University, Department of Post-preparatory English to prepare students in accordance with the expectations of the content-course teachers. By investigating content course teachers' perceptions and expectations about the reading abilities of the students, this study constitutes an important source for future curricular developments for the academic reading course. The needs analysis in this study was conducted to find answers to the following research questions:

1. What are the reading requirements of the first year English medium content courses at Hacettepe University in terms of readability and vocabulary levels?

2. What kinds of differences exist in readability levels and reading demands across departments in the first year?

3. To what extent do the reading levels and vocabulary knowledge of students in the first year English-medium departments match the content course instructors' expectations?

In this chapter, detailed information about the participants and the context in which this study was carried out, the instruments that were employed in the study, the procedure of needs analysis, and data analysis are provided.

The context

Hacettepe University is one of the largest universities in Turkey with a student population of over 30,000. The University has nine faculties, thirteen vocational schools and a state conservatoire. Out of these nine faculties and thirteen vocational schools, six faculties and seven schools at Hacettepe University require one year of preparatory English classes for their students. However, the percentage of English use in instruction varies by department. Some departments give 100% of instruction in English, while others give only 30% of instruction in English.

Hacettepe University, The School of Foreign Languages, Department of Basic English is responsible for providing quality education and meaningful learning environments that will equip its learners with the English language skills they will need to communicate effectively as adults in the academic community. The department is also responsible for preparing the students for the international arena where English is becoming a vital requisite in many aspects of life.

The Division of Post-preparatory English Courses (DPPE) offers a selection of courses to Hacettepe University students to help them improve their English language proficiency. Therefore, its aim is to equip students with the necessary language skills so that they will be able to function productively and efficiently in their academic lives as well as their professional lives upon graduation.

Table 4 below presents the schools and faculties with departments that require ING-123-124, the Academic Reading course from the Department of Post-

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preparatory English Courses, the percentage of English use in language instruction and the number of teachers and students by department.

Table 4

Hacettepe University Faculties and Schools Percentage of English Usage, Number of
Teachers and Students according to Departments

HU Faculty Depts and Schools	% of Eng.	ING Required	# of Students	# of teachers
Faculty of Dentistry	30%		573	166
Faculty of Economics and Administrative Sciences*				
Dept. of Business Administration	100%**	+	458	36
Dept. of Economics (Turkish)	30%	+	447	23
Dept. of Economics (English)	100%**		282	23
Dept. of International Relations	100% **	+	100	20
Dept. of Public Administration	30%	+	267	26
Dept. of Public Finance	30%		279	11
Sub total:			**1833**	**139**
Faculty of Education	30%		2545	102
Faculty of Engineering*				
Dept. of Chemical Engineering	100%**	+	315	47
Dept. of Computer Science and Engineering	30%	+	317	22
Dept. of Electrical and Electronics Engineering	100%**	+	388	39
Dept. of Environmental Engineering	30%		-	-
Dept. of Food Engineering	30%	+	324	36
Dept. of Geodesy and Photogrammetry	30%		-	-
Dept. of Geological Engineering	30%	+	296	93
Dept. of Mining Engineering	30%	+	274	36
Dept. of Nuclear Engineering	100% **	+	108	21
Dept. of Physics Engineering	30%	+	379	84
Sub total:			**2401**	**378**
Faculty of Fine Arts	30%		380	60
Faculty of Letters	30%		4313	267
Faculty of Medicine*				
Medicine (Turkish)	30%	+	1334	997
Medicine (English)	100%**	+	1033	997
Sub total:			2367	1994
Faculty of Pharmacy	30%		454	139
Faculty of Science*				
Dept of Biology	30%	+	541	106
Dept of Mathematics	30%	+	456	35
Dept of Statistics	30%	+	462	43
Dept. of Chemistry	100%**	+	454	68
Sub total:	30%		1913	252
Vocational Schools				
Sub total:			3757	583
Approximate TOTAL:			**20536**	**3813**

Note. ING= Academic Reading Course, ING 123-124; *Faculties participating in this study;
**Departments participating in this study with 100% English instruction; # of students: All
registered students in the departments; *** Numbers are not available for all departments;
+ Requires ING

This study involves only those departments with 100% of instruction in English. These departments are presented in Table 5 below:

Table 5

Departments with 100% English instruction at Hacettepe University.

Faculties and Departments
Faculty of Economics and Administrative Sciences
Department of Economics
Department of International Relations
Department of Business Administration
Faculty of Engineering
Department of Chemical Engineering
Department of Electrical and Electronics Engineering
Department of Nuclear Engineering
Faculty of Science
Department of Chemistry
Faculty of Medicine
English instruction section

Participants

Thirty-five content course instructors teaching first-year students from the above-mentioned 100% English instruction departments were chosen as the participants for the study. The thirty-five instructors who participated in this study were from the following departments: Seven content course teachers from the Faculty of Economics and Administrative Sciences; two content course teachers from the Department of Economics; three content course instructors from the Department of International Relations; and two content course instructors from the department of Business Administration. In addition, nine content course teachers from the Faculty of Engineering also participated in the study. Three content course teachers from the Department of Chemical Engineering; two from the Department of Electrical and Electronics Engineering; and four from the Department of Nuclear Engineering were also the participants of this study. Nine teachers from the Faculty

of Science took part in the study. Finally, ten content course teachers from the

Faculty of Medicine in the English instruction section participated in the study.

There are a total of 1251 content course teachers from the above-mentioned

100% English-medium departments. The questionnaire was distributed to fifty first-

year content course teachers teaching first-year classes out of the 1251, with 35

questionnaires completed and returned. The first-year content course teachers who

completed the questionnaire are shown in Table 6.

Table 6

Number of participants by Faculty

Faculties/departments	Total # of faculty	# of teachers teaching 1st……	# Qs returned	% of participa	# Ints
Faculty of Economics and Administrative Sciences					
Dept. of Economics	23	3	2	85	2
Dept. of International Relations	20	4	3	85	2
Dept. of Business Administration	36	4	2	50	2
Sub Total #	**79**	**11**	**7**	**75**	**6**
Faculty of Engineering					
Dept. of Chemical Engineering	47	5	3	80	2
Dept. of Electrical and Electronics Engineering	39	4	2	50	2
Dept. of Nuclear Engineering	21	6	4	70	2
Sub Total #	**107**	**15**	**9**	**70**	**6**
Faculty of Science					
Dept. of Chemistry	68	14	9	75	2
Total #	**68**	**14**	**9**	**75**	**2**
Faculty of Medicine					
English instruction section	997	10	10	100	4
Sub Total #	**997**	**10**	**10**	**100**	**4**
Overall TOTAL # Participants	1251	50	35	80	18

Note. Qs: Questionnaires; %:Percentage; Ints: Interviews; #:Number

In order to test the vocabulary levels of students, ninety-nine first-year students

in English-medium departments who were taking the first year Academic Reading

course (ING 123/124) from the Department of Post-Preparatory English Courses took the vocabulary test. Also samples from the 2001 final preparatory class exam and the reading samples from the textbook *Interactions 2* were collected. A comparison between the vocabulary levels of the first-year students and the vocabulary analysis of the preparatory class final exam determined the actual reading and vocabulary levels of the students.

<div align="center">Instruments</div>

Questionnaires are the best way to gather data if large-scale information is needed from a great many people (Brown & Rodgers, 2002). In this study, a questionnaire was distributed to the content course teachers in the English medium departments. The questionnaire used in this study was adapted from previous needs assessment studies conducted in Turkey by Soner Arık (2002), Cemile Güler (2004) and Füsun Yazıcıoğlu (2004). (See Appendix B for a copy of the questionnaire).

The questionnaire used in this study was composed of four parts: the first part, that is, questions from one to seven, provided background information about the participating content course teachers (See Appendix B for a sample of the questionnaire). Multiple-choice questions were used for this part of the questionnaire. The second part, that is, questions from eight to nine, provided information about content course teachers' general perceptions of students' reading needs and current reading skills. A five-point Likert scale was used in which responses ranged from "strongly disagree" to "strongly agree" for question eight. In question nine, again a five-point Likert scale was used and the responses of the participants for this question ranged from "never" to "always". The third part, that is, questions from ten to eleven, provided information about content course teachers'

expectations related to the reading abilities of their students. A four-point Likert scale was used in which the responses ranged from "very appropriate" to "not appropriate" for question ten. In question eleven, again a four-point Likert scale was used. Responses of the participants for question eleven ranged from "not important" to "very important". The fourth part, including part A and B of question twelve, was based on Mohan's (1990) knowledge structures. According to Mohan, knowledge structures, such as classification, principles, evaluation, description, sequence and choice have been widely used to describe typical types of reading structures from academic disciplines. This part (Part A) was included in the questionnaire to discover which of these types of reading structures are typical in the targeted academic areas. The purpose of this section (Part B), was also to determine content course teachers' perceptions of which structures are most difficult for the students in these academic areas. A four-point Likert scale was used in this section on structures in which responses ranged from "very typical" to "rare". For part B, a four-point Likert scale was used. Responses for the participants ranged from "most difficulty" to "no difficulty".

The second instrument for this study was an interview protocol with content course teachers. Also, reading samples from the textbook *Interactions 2* and the 2001 final test given to the students in Preparatory school were collected in order to analyze the vocabulary level of the students exiting the program.

Finally, a vocabulary test was given to ninety-nine first-year students in English medium departments who are taking the Academic Reading course (ING 123/124) from the Department of Post-preparatory English Courses. The test used in the study was adapted form Paul Nation's Vocabulary Levels Test (Nation, 1983;

1990). The test samples 18 items at each of the 2000, 3000, 5000, University Word

List (UWL), and 10.000 word levels. In this study the 2000 word list (K2), and UWL

were used to determine the general and the academic vocabulary knowledge of

students. In the test, a meaningful context for each word and the first letters of the

target item in the question are provided. An example of the questions in the test is,

*I'm glad we had this opp_____ to tal*k (opportunity). The purpose of providing the

first letters of the target item is to prevent test-takers from choosing another word

which would be semantically correct, but from a different frequency level. These

tests were used in the study to determine vocabulary levels of first-year students from

different departments. Levels of vocabulary knowledge were determined according

to Nation's (1990) guideline: "If someone scores 12 or less out of 18 in a section of

the test, then it is worth helping that learner study the vocabulary at that

level…When a subject's vocabulary knowledge score at a certain level exceeded 12

(66.67%) out of 18, he/she was said to have met that vocabulary level" and can study

the next level.

A comparison between the results of the vocabulary level tests, vocabulary

level analysis and readability of the sample final exam collected from the preparatory

class and the textbook samples from the first-year content courses were used to

demonstrate the gap between the current and the expected levels of the students.

Data Collection Procedures

Permission from Hacettepe University to collect reading text samples from

100% English medium departments, to distribute the questionnaire to the content

course teachers of these departments, and to test students' vocabulary and reading

levels at these departments was received in February 2005. In February, the

questionnaire was prepared and piloted with four content course teachers from the faculties of Engineering and International Relations at Hacettepe University in order to reduce the ambiguity in the questionnaire. In the first week of March, the questionnaires were delivered personally to the selected instructors of content courses with 100% English instruction, and sample texts from the content course teachers were collected. Participant instructors were interviewed simultaneously to collecting the questionnaires. In the middle of March the text analysis began. A sample final test and the textbook were collected from the preparatory school, and the readability and vocabulary levels of these texts were analyzed. The vocabulary test was given to 99 first-year students in English medium departments who are taking the Academic Reading course, second term (ING-124) from the Department of Post-preparatory English Courses.

Data Analysis

In this study, quantitative data obtained from the questionnaires was first analyzed by using descriptive statistical analysis techniques such as frequencies, mean scores and percentages. Readability level analysis was done by Microsoft Flesch-Kincaid Grade Level and vocabulary analysis was done by Vocabulary Profiler.

Conclusion

In this methodology chapter, the participants, instruments, data collection procedures, and data analysis were explained. In the next chapter, the actual data will be presented and analyzed.

CHAPTER IV: DATA ANALYSIS

Overview of the Study

The purpose of this study is to conduct a needs analysis in order to determine the academic needs of the students in Academic Reading courses taught by the Department of Post-preparatory English at Hacettepe University. The needs were determined according to the perspectives of the content course teachers in English-medium departments and by an analysis of required texts and student vocabulary levels. The first group of participants for this study were thirty-five content course teachers distributed across the following departments: the Department of Economics, the Department of International Relations, the Department of Business Administration, the Department of Nuclear Engineering, the Department of Electrical and Electronics Engineering, the Department of Chemical Engineering, the English instruction section of the Faculty of Medicine and, finally, the Department of Chemistry. The second group of participants was a selected group of ninety-nine first-year students from these departments.

First, one set of data for this study was collected with a questionnaire distributed to the thirty-five content course instructors teaching first-year classes in English-medium departments. Some of the content course teachers from these selected groups were also interviewed. In addition, samples of required textbooks were collected from these content course teachers. To determine the students' needs

in terms of vocabulary, a selected group of first-year students in these departments were given a vocabulary level test. Finally, sample texts from the 2001 final exam given to the preparatory school students and a textbook taught in the Prep School were collected to determine the gap between the vocabulary level of the students entering the first-year courses and those actually studying in the first-year courses.

This chapter presents the findings resulting from an analysis of these data sets. The chapter begins with an analysis of the questionnaire distributed to thirty-five content course teachers across English-medium departments. The questionnaire can be categorized into three sub-sections: content course teachers' general perceptions of the students' reading needs and current reading skills, content course teachers' expectations related to the reading abilities of their students, and content course teachers' awareness of the text structures of readings in their courses. In each section, the responses to the questionnaire were analyzed and sorted by the discipline of the respondents (Department of Economics, the Department of International Relations, the Department of Business Administration, the Department of Chemistry from the Faculty of Science, the Department of Nuclear Engineering, the Department of Electrical and Electronics Engineering, the Department of Chemical Engineering, and the English instruction section of the Faculty of Medicine).

Analysis of the Questionnaire

Questionnaire items 1 to 8 gathered the background demographic information about the participants.

Table 7

<u>Number of participants by department</u>

Departments	Number	Percentage
Economics	2	6
Business Administration	2	6
International Relations	2	6
Chemical Engineering	3	8
Electrical and Electronics Engineering	2	6
Nuclear Engineering	5	14
Medicine (English section)	10	28
Chemistry	9	26
Total #	**35**	**100**

The thirty-five participants were evenly distributed across the departments, with the exception of the English section of the department of Medicine and the department of Chemistry. The department of Medicine and the Department of Chemistry had more participants because at Hacettepe University the Faculty of Medicine is large, and therefore, the number of students studying in these departments as well as the instructors teaching in these departments is higher than other departments. The majority of the participants (50%) were research assistants, probably because academic reading is taught in the first-year by research assistants. More than half of the participants (55%) have been teaching in their profession for five years or less at Hacettepe University.

The thirty-five participants were all teaching first-year introductory courses. The names of the courses are presented below in Table 8.

Table8

Courses taught by first-year content teachers returning the questionnaire

Courses	Questionnaire participants
Financial accounting	1
Principles of economics	1
Economic history	1
Mathematics for economics	1
International political economy	1
Environmental politics	1
Computer programming	1
Electric magnet waves	1
Chemical reaction engineering	1
Chemical Engineering process design	1
Polymer science and technology	1
Nuclear physics	2
Modern physics	2
Thermo dynamics	4
Physiology	7
General chemistry	9
Total	**35**

Courses taught by the questionnaire participants were evenly distributed across the departments, with the exception of Physiology taught in the English section of the department of Medicine, and General Chemistry taught in the department of Chemistry. The reason for this difference is because the number of students studying in these departments is higher than other departments at Hacettepe University. Some of these courses (40%) were taught by the participants were theoretical, and some were both theoretical and applied courses (35%). The number of students taking these courses was quite large, with 40% of the participants stating that their classes had more than sixty students. Other classes ranged from forty to fifty students.

In this section, demographic background information about the participant content course teachers was provided. In the following part of the questionnaire, information about content course teachers' general perceptions of students' reading needs and current reading skills is presented.

The second part of the questionnaire provides information about whether undergraduate students taking the participant content course teachers' courses need to read in English for their academic work.

Table 9

Content course teachers' general perceptions of students' reading needs in English

Do Undergraduate students need to be able to read in English?	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
	N	%	N	%	N	%	N	%	N	%	
	23	66	9	26	1	3	0	-	2	6	1.54

Note. N=35; Strongly Agree= 1; Agree=2; Neutral=3; Disagree=4; Strongly Disagree=5

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The striking feature of this item was that the great majority of the content course teachers, twenty-three out of thirty-five teachers, strongly agreed that undergraduate students taking their courses needed to read in English for their academic work.

To determine the actual material required in classes, question 9 focused on the content course teachers' general perceptions of the students' reading requirements in their courses. For this question, a five-point Likert Scale format was used.

Table 10

Summary of content course teachers' general perceptions of students' reading requirements in English ranked by means

Reading requirements in courses ranked by frequency	Never N	%	Seldom N	%	Sometimes N	%	Generally N	%	Always N	%	Mean
Course books	0	-	0	-	1	3	9	26	25	71	4.68
Examination items in English	0	-	0	-	4	11	4	11	27	77	4.66
Lecture notes and handouts	0	-	2		7	20	7	20	19	54	4.23
Information from the Internet	0	-	2	6	13	37	9	26	11	31	3.83
Articles from professional journals	1	3	4	11	12	34	9	26	9	26	3.60
Graphs, diagrams and tables	0	-	4	11	15	43	8	23	8	23	3.57
Reference books	0	-	4	11	14	40	11	31	6	17	3.54
General information	1	3	4	11	12	34	12	34	6	17	3.51
Reports	3	9	3	9	11	31	12	34	6	17	3.43
Articles in magazines and newspapers	4	11	9	26	11	31	7	20	4	11	2.94
Instruction manuals, user manuals or booklets	5	14	6	17	9	26	9	26	6	17	2.88

Note. N=35; Never=1, Seldom= 2, Sometimes= 3, Generally= 4, Always= 5

As shown in the table, in terms of reading requirements in English a majority of the content course teachers stated that course books (71%), examination items (77%), lecture notes and handouts (54%) were among the most frequently used

materials. Whereas, articles in magazines and newspapers (11%) and instruction

manuals, user manuals or booklets (17%) were seldom used in their courses.

The next section explores whether the content course teachers were satisfied

with the training given by the Department of Post-preparatory English (DPPE) or

not. Results are summarized in the table below.

Table 11

Content course teachers' rating of training given by DPPE

Rate the training given by the DPPE in the academic reading course	Very Appropriate N %		Appropriate N %		Somewhat Appropriate N %		Inappropriate N %		Mean
	3	9	14	40	17	49	1	3	2.45

Note. N=35; Very Appropriate=1, Appropriate=2, Somewhat Appropriate=3, Inappropriate=4

For this item in the questionnaire, a four-point Likert scale was used. For the

interpretation, "very appropriate" and "appropriate" were grouped together as they

indicate positive responses. "Somewhat appropriate" and "Inappropriate" were also

grouped together indicating negative responses to the question. The responses of

content course teachers cluster in the middle. This can be interpreted as the training

given by the department of Post-preparatory English in the Academic reading course

would be appropriate if some changes are made to improve the program. Thus,

content course teachers thought that the training given by DPPE was somewhat

appropriate. Their suggestions about which materials should be added to the syllabus

of the Academic Reading course to make the course more useful for the students are

indicated in Table 12.

Table 12

Content course teachers' expectations related to the reading abilities of their students, rank ordered by means

Content course teachers' expectations	Not important		Not very important		Important		Very important		Mean
	N	%	N	%	N	%	N	%	
Training on text organization	0	-	0	-	11	31	24	69	3.97
Academic vocabulary training	0	-	1	3	13	37	21	60	3.57
Training on reading strategies	0	-	0	-	15	43	20	55	3.57
Readings tailored to specific academic fields	0	-	1	3	15	43	19	54	3.51
General vocabulary training	0	-	0	-	23	66	12	34	3.34
Readings on general topics	0	-	4	11	24	69	7	20	3.08

Note. N=35; Not Important=1, Not Very Important=2, Important=3, Very Important=4

A great majority of content course teachers (69%) stated that training on text organization was very important. It is followed by academic vocabulary training, with 60% rating it very important. Training on reading strategies (55%) was also stated as important and should be included in the syllabus of the Academic reading course. However, content course teachers also indicated in the interviews that all of these training types are important and they all should be included in the syllabus of the Academic reading course.

Content course teachers' awareness of the text structures in their readings was the focus of Question 12. Mohan (1990) separates academic reading discourse into six knowledge structures: classification; principle; evaluation; description; sequence and choice/decision. The following analysis was completed from two different perspectives. First, it considers frequency of use and second, the difficulty levels of these knowledge structures. A four-point Likert scale was used in the questionnaire with answers ranging from "A very typical characteristic" to "A rare characteristic" for the first part and "very difficult" to "not difficult" for the second part.

The first part of the knowledge structure analysis explored whether classification, sequence, principle, choice, evaluation or description was typical of the participant content course teachers' own areas.

Table 13

Mohan's knowledge structures: Part A- Characteristics of field, ranked by means from very typical to not common

Mohan's knowledge structures	A very typical characteristic		A typical characteristic		A rare characteristic		Not a common characteristic		Mean
	N	%	N	%	N	%	N	%	
Description	21	60	12	34	1	3	1	3	1.48
Classification	23	66	7	20	4	11	1	3	1.51
Evaluation	23	66	6	17	4	11	2	6	1.57
Choice/decision	18	51	13	37	3	9	1	3	1.62
Principle	21	60	7	20	4	11	3	9	1.68
Sequence	3	9	9	26	12	34	11	31	2.88

Note. N=35; Very Typical characteristic=1, Typical characteristic=2, Rare characteristic=3, Not Common=4

For the purpose of this discussion, "a very typical characteristic" and "a typical characteristic" were grouped to indicate higher frequency. Also, "a rare characteristic" and "not a common characteristic" were grouped to indicate less frequency. A majority of content course teachers (65%) stated that sequence was a kind of reading content that is not a common characteristic of the participant content course teachers' own areas. However, other knowledge structures such as description (94%), choice/decision (88), classification (86%), evaluation (83%), and principle (80%) were stated as typical characteristics of the knowledge structures used in the participant teachers' own areas.

The second part of the knowledge structure analysis explored whether

classification, sequence, principle, choice, evaluation or description was a kind of

reading content that students have most difficulty with in content course teachers'

courses.

Table 14

Mohan's knowledge structures: Part B-Difficulty level, ranked by means from not
difficult to very difficult

Mohan's knowledge structures	Very difficult		A little difficult		With effort		Not difficult		Mean
	N %		N	%					
	%				N	%	N	%	
Sequence	0	-	6	17	10	29	19	54	3.37
Classification	3	9	12	34	15	43	5	15	2.62
Principle	5	14	8	23	18	51	4	11	2.60
Description	8	23	13	37	12	34	2	6	2.22
Evaluation	11	31	13	37	10	29	1	3	2.02
Choice/decision	6	17	16	46	13	37	0	-	2.02

Note. N=35; Very Difficult=1, a little difficult=2, with effort=3, not difficult=4

Interestingly enough, even though sequence was not a common type of

knowledge structure in their courses, it was ranked as a knowledge structure that

students handle with effort. The participant content course teachers also stated

evaluation and choice as the most difficult knowledge structures, and they were

ranked as the typical characteristics of the materials used in the course.

An analysis of Mohan's (1990) knowledge structures was done by the

researcher by comparing the knowledge structures in texts collected from the first-

year content teachers and content course teachers' responses in the questionnaire

related to Mohan's knowledge structures. Sample texts were analyzed to explore

whether there is a match between the responses and the text structures, or not.

Teachers from the Department of Chemistry stated that the common

characteristics of the texts that are taught in their department were classification, principles, evaluation and description. An analysis of the collected text depicted that there is a match between the responses of the content teachers and the text analysis of the above-mentioned knowledge structures.

There is also a match between the text analysis and the responses of the content teachers in the questionnaire concerning knowledge structures for the Department of International Relations, Chemical Engineering, and Medicine. Content teachers in the Department of Economics stated that the most common characteristics of the texts that they teach were evaluation, description, choice and classification. However, the sample collected from the content course teacher was an example of sequence.

These reading samples were collected to provide information about the reading expectations of the content teachers of the first-year students. In the following section, an analysis of the follow-up interview coding will be presented to provide insight into teachers' perceptions, experiences and practices related to their academic reading expectations of first-year students.

Analysis of the interviews

In order to investigate the perceptions of content course teachers about the academic reading course taught by the Department of Post-preparatory English, interviews were conducted with eighteen content course teachers who also filled out questionnaires. Transcriptions of the interview data were analyzed by identifying frequent responses across interviews and by coding these responses (See Appendix C for a sample of interview transcriptions and coding). Content course teachers were asked specifically about their expectations from students who have taken the first-

year academic reading course. They were also asked about students' performance in the classroom, the reading difficulties that students face, and their suggestions for solving these issues. The interview questions are presented below.

1. What are your expectations from students who have taken the Academic Reading course from the Department of Post-preparatory English?

2. Can students respond to your expectations?

3. What are the difficulties in reading that students face in your course?

4. What kind of a solution can you suggest for the problems?

(See Appendix C for a sample of interview codes)

For the first question, all of the interviewees agreed that understanding the meaning of texts, without necessarily trying to understand the meanings of each word, was one of the major expectations. Eight of the interviewees stated that they expect students to read quickly if they have taken the academic reading course. Ten of the interviewees stated that they expect students to master academic vocabulary. An example from an interview on this point from the Department of Chemistry follows:

> Students know English grammar but their academic
> vocabulary knowledge is really inadequate. It turns out to be
> very difficult for them to understand the unknown word and,
> thus, understand the whole text.

For the second question, the majority of the interviewees, fifteen out of eighteen, stated that students have difficulty in understanding English. An example from an interview on this point from the Department of Nuclear Engineering follows:

> Students cannot live up to our expectations. There might be a
> problem with the training given at the Prep School. Students are
> worse than before. Some of them say that they don't even understand
> English. Let alone reading, they don't understand anything.

All of the interviewees agreed that students asked for Turkish translations both in the classroom activities and in the exams. Two of the interviewees claimed that the reason students ask for Turkish translation is to confirm that they understood the reading. Sixteen of the interviewees believed that students ask for Turkish translation because they don't understand what they read in English. One of the interviewees stated that students' problems with English stem from their problems with Turkish. An example from an interview on this point from the Department of Chemical Engineering follows:

> Besides having problems with the grammar structure in English, students have problems with Turkish. Students have problems with understanding concepts. When I give a test, the problems students face are the same in both Turkish and English.

For the third question regarding difficulties, all of the interviewees agreed that students have difficulty in reading and understanding the exam questions because they are in English. Ten of the eighteen interviewees indicated that students have difficulty in their courses because of their inadequate vocabulary knowledge. These ten interviewees also stated that students try to understand the meaning of every unknown word, making it impossible to finish reading the text in a limited time span. One of the interviewees pointed out that students have difficulty in understanding concepts in his class. First he had to explain the concept in Turkish and then tried to teach it in English.

For the final question, interviewees made various suggestions on how to overcome the difficulties that students face in their courses. Five of the eighteen interviewees suggested that 100% English instruction would force students to think and produce in English more effectively.   One of the interviewees suggested bi-

lingual education, as he believed that all the problems that students face stem from students' problems with Turkish. The example from the interview on this point from the Department of Chemical Engineering follows:

> My suggestion would be bi-lingual education. Students should learn both English and Turkish. For example, in our field the word "procurement" is used often. If the student does not know what procurement means in Turkish, how is he going to understand the concept in English?

Ten of the interviewees suggested not to teach general English, but English in courses tailored to department needs and expectations. Eight of the interviewees suggested emphasizing reading strategy training because they see it as the key to successful reading. Ten of the interviewees suggested academic vocabulary training because students have difficulty in using and understanding academic vocabulary. Three of the interviewees suggested that the Department of Post-preparatory English should choose articles from different fields as reading materials in academic reading course.

In summary, according to responses collected from the interviews with the eighteen participant content course teachers, the teachers expect successful students to read quickly, and understand what they read by using different reading strategies. They also emphasized the importance of mastering academic vocabulary. Importantly, the interviewees declared that student performance in their course was not up to their expectations.

The interviewees stated that the lack of vocabulary knowledge causes the most difficulty for students. As a suggestion, the majority of the interviewees declared that the academic reading curriculum in the department of post-preparatory English should be revised to include academic vocabulary training and by selecting

reading materials according to departments. In addition, interviewees stated that strategy training should continue to emphasize reading to understand the gist, and guessing the meaning of unknown words.

Textbook readability and vocabulary analysis

A readability and vocabulary analysis was conducted with the texts collected from the first-year content course teachers of English-medium departments. The first level of analysis was to determine the readability levels of the sample texts. The instrument for this analysis was Microsoft Word Flesch-Kincaid Readability test. This test has two aspects for grading a text's readability level: reading ease and reading grade level. For ranking the levels of the sample texts, reading ease from Microsoft Word Flesch-Kincaid Readability test was selected as the criteria. The reading ease scoring scale is presented below:

Table 15

Flesch-Kincaid Reading Ease scores

Score	Reading Difficulty
90 – 100	Very Easy
80 – 89	Easy
70 – 79	Fairly Easy
60 – 69	Standard
50 – 59	Fairly Difficult
30 – 49	Difficult
0 – 29	Very Difficult

Source: Grammatik (software package and documentation)

Reading ease for Microsoft Word Flesch-Kincaid Readability Test across English-medium departments at Hacettepe University is shown in Table 16 below.

Table 16

Departments ranked by readability level (in respective textbooks) from difficult to
easier

Departments	Textbooks	Reading Ease	Reading difficulty
1. Medicine	*The molecular logic of life*	23.6	V. difficult
2. Business administration	*Economics*	35.3	Difficult
3. Nuclear Engineering	*Engineering communications*	38.0	Difficult
4. Chemical engineering	*Introduction to Engineering*	39.0	Difficult
5. International relations	*Concepts of ecology*	42.2	Difficult
6. Electric and Electronics Eng.	*Programming*	44.3	Difficult
7. Economics	*A handbook of social science research*	45.7	Difficult
Prep textbook		**49.8**	**F. difficult**
8. Chemistry	*General laboratory directions*	56.8	Fairly difficult
Prep test		**74.7**	**F. easy**
Average reading level for first-year students		40.61	Difficult

Note. Reading Ease, lower numbers mean more difficult; V=very, F=fairly

As can be seen in Table 16, there is a noticeable difference among the reading
ease levels of the texts collected from the eight English-medium departments. For
example, the Medical text, *The Molecular Logic of Life,* ranked as the most difficult
text with 23.6 reading ease score, while the Chemistry text, *General Laboratory
Directions,* ranked as the easiest with a 56.8 reading ease score. The average reading
ease level for these eight departments was 40.61, not including the Prep School
textbook and test. This score indicates that departments like Medicine and Business
Administration, Nuclear Engineering, Chemical Engineering, International Relations,
Electric and Electronics Engineering and Economics teach difficult texts in
comparison to the Prep textbook which is fairly difficult, and to the 2001 prep exam
which is fairly easy. Whereas, the department of Chemistry uses a textbook, that is
slightly easier than the prep textbook.

The second analysis of the sample texts collected from these departments was a vocabulary analysis conducted by using Vocabulary Profiler. The analysis includes three scores: first, a vocabulary analysis for K1 word level (1000 most frequent words), second, a K2 word level analysis (2nd 1000 most frequent words). Another word level analyzed in the Vocabulary Profiler is the Academic Word List (AWL). This list indicates words that are included in the Academic Word List (Coxhead, 2001). AWL percentages were used to rank the sample texts collected from the English-medium departments. The number of words, tokens and percentages across departments are presented below in Table 17. In addition, the Prep textbook and 2001 final exam were sequenced within the ranked order.

Table 17

First-year textbooks with vocabulary level analyses, ranked overall by AWL frequency

Word lists		K1			K2				AWL			
Selected first-year textbooks	Total # of words	Tokens of K1	% of K1	K1 Rank	Tokens of K2	% of K2	K2 Rank	Running percentage	Tokens of AWL	% of AWL	AWL Rank	Running percentage
Engineering communities	1038	793	76.40	4	39	3.76	8	80.16	140	13.49	1	93.65
Economics	1275	898	70.43	6	51	4.00	7	74.43	160	12.55	2	86.98
Introduction to Engineering	411	305	74.21	5	40	9.73	2	83.94	47	11.44	3	95.38
Molecular logic of life	1401	907	64.74	8	78	5.57	5	70.31	148	9.56	4	79.87
Handbook for social sciences research	1478	1191	80.58	1	98	6.63	3	87.21	134	9.07	5	96.28
Concepts of ecology	2079	1164	78.98	2	100	4.81	6	83.79	144	6.93	6	90.72
Programming	1201	930	77.44	3	75	6.24	4	83.68	83	6.91	7	90.59
Prep textbook	**3092**	**2554**	**82.60**	**--**	**153**	**4.95**	**--**		**182**	**5.89**	**--**	
General laboratory directions	809	543	67.02	7	90	11.12	1	78.14	27	3.34	8	81.48
Prep test	**860**	**688**	**84.31**	**--**	**44**	**6.00**	**--**	**90.31**	**7**	**0.86**	**--**	**91.17**

Note. Prep textbook and 2001 final exam were not included in the calculation of the total numbers
%= Percentage; # = Number; K1= 1000 word list; K2= 2000 word list; AWL= Academic word list

As can be seen in Table 17, Nuclear Engineering text, *Engineering Communities,* and Business Administration text, *Economics,* ranked as the first two departments with 13.49% and 12.55% in the AWL. They, interestingly, were ranked as the last two in terms of K2 word level. The Chemistry text, *General Laboratory Directions,* ranked as the last text in terms of the AWL with 3.61%. However, it was the first in terms of K2 word level. The 2001 prep test ranked as the lowest in the AWL after Chemistry text, *General Laboratory Directions,* and the prep textbook, *Interactions 2,* also ranked low in terms of AWL.

The percentage of K1 words was the highest in the Economics text, *Handbook for Social Sciences;* International Relations text, *Concepts of Ecology;* and Electrics and Electronics text, *Programming*. The number was lower in Medicine text, *Molecular Logic of Life,* which ranked as the highest in AWL and Chemistry text, *General Laboratory Direction*. Overall, the prep test, with 84.31% in K1 words, ranked as the highest. It is followed by the Prep textbook *Interactions 2* with 82.60%.

The percentage of 2000 level words varies across departments. Although it ranked as the easiest in Reading ease analysis, in terms of percentage in K2 word list, the Chemistry text, General *Laboratory Directions,* ranked as having the highest percentage of 2000 level words. Interestingly, Nuclear Engineering text, *Engineering Communities;* Business Administration text, *Economics;* and Medicine text, *Molecular Logic of Life,* which were among the departments having the highest reading ease level, ranked as the lowest in terms of the percentage in K2 word list.

In this section an analysis of the readability and vocabulary levels of the text samples collected from eight English-medium departments were conducted. In the following section, students' vocabulary levels will be analyzed in comparison with the text and readability analysis conducted in this section.

Student vocabulary levels

A vocabulary test was given to 99 first-year students from 100% English-medium departments. The test was adapted form Paul Nation's Vocabulary Levels Test (Nation, 1983; 1990). The test samples 18 items at each of the 2000, 3000, 5000, University Word List (UWL), and 10 000 word levels. For this study, 2000,

and UWL word levels tests were used. The scores of students by departments were

given below in Table 18.

Table 18

Scores of students by departments

Departments	Total # of students		2000 level		Lower than 2000 level		UWL	
	N	%	N	%	N	%	N	%
International Relations	10	10	9	9	1	1	1	1
Business Administration	16	16	14	14	2	2	5	5
Economics	15	15	14	14	1	1	1	1
Medicine	5	5	5	5	-	-	-	-
Chemistry	11	11	11	11	10	10	-	-
Electrics and Electronics Eng.	15	15	14	14	1	1	5	5
Chemistry Engineering	17	17	15	15	2	2	6	6
Nuclear Engineering	10	10	2	2	8	8	-	-
Total #	99	100	74	75	25	25	18	18

Note. # =Number, %= percentage

As can be seen in Table 18, the vocabulary test was given to 99 first-year

students and 75% of the students scored in 2000 word level. Only 18% of the

students scored higher than 66.67% in UWL test. The results indicate that a great

majority of students from English-medium departments scored at the 2000 word

level in the vocabulary test and 25% of the students scored lower than the 2000 word

level. 81% of the students failed to answer the questions for the UWL test.

Preparatory school final exam and textbook analysis

The 2001final exam from the preparatory school was collected to be analyzed

in terms of readability and vocabulary levels (See Appendix D for a copy of the

sample exam). Prep test used in the analysis belong to the exit exam in 2001.

Because of test security, a more recent copy of the final test cannot be used in the

study. Therefore, a copy from the textbook, Interactions *2,* used at Intermediate and

Upper Intermediate levels in Prep School was also used to determine exit expectations from the Preparatory School.

Microsoft Word Flesch-Kincaid Reading ease was used to determine the readability level and Vocabulary profiler was used to vocabulary levels of the exam and the textbook. Readability and vocabulary levels of the exam were given below in Table 19.

Table 19

Prep test and textbook readability and vocabulary level analysis, ranked by AWL %

	Total # of words	Reading ease	Off-list words		K1		K2		AWL	
			tokens	%	tokens	%	tokens	%	Tokens	%
2001 Prep exam	860	74.7	402	7.78	688	84.31	44	6.00	7	0.86
Prep textbook	3092	49.8	203	6.57	2554	82.60	153	4.95	182	5.89

Note. # =Number, %= Percentage

As can be seen in the table, the 2001 final test given in the preparatory school of Hacettepe University, School of Foreign Languages, can be considered to be an easy test in terms of its reading ease level 74.7, and includes a great majority of words with 84.31% belonging to 1000 level word list. The least number of words (0.86%) used in the exam were from AWL words. Prep School textbook was higher than the Prep School exam in terms of Reading ease (49.8) and the AWL percentage (5.89%). However, in terms of K1, and K2, it scored lower than the 2001 Prep Exam.

Conclusion

The data collected from the content course teachers from English-medium departments were analyzed to find out students' required needs in Academic reading course. The analysis was based on percentages and frequencies. In addition, interviews were conducted simultaneously with some of these content course teachers. Sample texts from these content course teachers were also collected and analyzed in terms of readability and vocabulary levels. Ninety-nine students from these departments were also given a vocabulary test. Finally, the 2001 final exam and reading samples from the textbook of the preparatory school were collected to be analyzed in terms of readability and vocabulary levels. In the following chapter, the results that were explained in the Data Analysis Chapter will be discussed in terms of the research questions, findings, pedagogical implications, limitations of the study and suggestions for further studies.

CHAPTER V: CONCLUSION

Overview of the Study

The purpose of this study is to conduct a needs analysis of content-courses teachers' expectations by determining the gap between the current and the expected level of students in English medium departments at Hacettepe University. This is done by analyzing vocabulary and reading levels of these students to enable the teachers at Hacettepe University, Department of Post-preparatory English to prepare students in accordance with the expectations of the content-course teachers. By investigating content course teachers' perceptions and expectations about the reading abilities of the students, this study constitutes an important source for future curricular developments for the academic reading course. The needs analysis in this study was conducted to find answers to the following research questions:

1. What are the reading requirements of the first year English medium content courses at Hacettepe University in terms of readability and vocabulary levels?

2. What kinds of differences exist in readability levels and reading demands across departments in the first year?

3. To what extent do the reading levels and vocabulary knowledge of students in the first year English-medium departments match the content course instructors' expectations?

In this chapter, the findings of this study will be discussed. The findings of the quantitative analysis and results reached through the analysis of the interview

coding will also be related to the literature in the discussion section. Both the points where the results are in parallel with literature and the points that conflict with the literature will be presented. The possible reasons for the results will be explained. After the pedagogical implications, limitations of the study will be mentioned. In the conclusion, the major findings of this study will be summarized.

Discussion of the Findings

When the results are analyzed in terms of reading requirements, reading in English is certainly required and important in all of the eight English-medium departments. This result supports the idea that academic reading is important in university education (Jordan, 1997). Yet, findings also reveal that students in eight English-medium departments are not competent in academic reading. In addition, it can be said that the reading requirements in most of the content courses are considerably higher than the exit expectations from the Prep School. In addition, a measure of first-year students' reading ability and vocabulary knowledge are also below these expectations. This suggests some inadequacy in the current English training in both the Preparatory School and the Department of Post-Preparatory English. There is a need for a reconsideration of how academic reading is taught at Hacettepe University.

Participant content course teachers stated that academic reading takes an important place in their courses as students are always required to read materials in English such as course books, examination items, lectures and handouts, and information from the Internet. The content teachers were also asked to evaluate the training given by the Department of Post-preparatory English. They stated that academic reading course taught by the Department of Post-preparatory English is

somewhat appropriate, but they also think that some changes should be made to make this course more effective and useful. They suggested adding training on understanding text organization, academic vocabulary, and reading strategies. They also need readings tailored to their specific academic fields in the curriculum of the academic reading course to make the course more useful for students.

The analysis of the texts collected from the first-year content course teachers indicated that there is a remarkable difference among the reading ease scores taken from the eight English-medium departments. Some departments such as, Medicine, Business Administration and Nuclear Engineering scored at a higher level in terms of readability level-this means that they are using more difficult texts. In terms of vocabulary analysis, these departments also scored higher than others in Academic Word List word level. Other departments such as, Chemistry and Economics scored at a lower level in reading ease, and are thus using relatively easier texts in their first-year courses. In terms of vocabulary analysis, these departments scored higher than others in K1 and K2 lists.

Moreover, the final exam (2001) and the reading samples from the textbook, *Interactions 2*, were collected from the Prep School. Prep test used in the analysis belong to the exit exam in 2001. Because of test security, a more recent copy of the final test cannot be used in the study. Therefore, a copy from the textbook, *Interactions 2,* used at Intermediate and Upper Intermediate levels in Prep School was also used to determine exit expectations from the Preparatory School. The final test's readability score was considerably lower than the samples from the content courses. The number of words in the AWL was also low in the Prep final exam. On the other had, the number of words in the K1 word level were high. The reading

samples from the textbook *Interactions 2*, however, have a higher readability level compared to the final test. In addition, the number of words in AWL in these reading samples was higher than the Prep final exam. These results indicated that exit expectations of the Prep School are lower than the first-year expectations of the content course teachers.

The vocabulary test given to the first-year students also showed that 75% of the first-year students studying in the eight above-mentioned English-medium departments scored at 2000 word level. Interestingly, only 18% of these students scored over 66.67% at University Word List (UWL) word level test.

These results indicate that a deficit vocabulary knowledge might be why students have problems in academic reading courses. They also assure the need for a reconsideration of the curriculum of the academic reading course so that the course can address students' reading needs.

Pedagogical Implications

The Department of Post-preparatory English Courses (DPPE) offers a selection of courses to Hacettepe University students to help them improve their English language proficiency.

> The stated aim is to equip students with the necessary language skills so that they will be more productive and efficient in their academic lives as well as in their professional lives after graduation. By constructing the learning environments to meet this goal in line with the needs of students, its student-centered English language teaching program will encourage the students to become

- self-confident in reading of various texts written in English
- self-confident in expressing themselves in spoken and written English
- conscious of their language learning processes
- critical and creative thinkers
- effective problem solvers

- aware of cultural differences

(Cited in http://www.ydyo.hacettepe.edu.tr/)

The Academic reading course, which is taught to students at the faculties and vocational schools where medium of instruction is totally or partially in English, is one of the Academic English courses taught by DPPE. Therefore, apart from the general objectives of DPPE mentioned above, for this course the specific aim is to teach academic reading skills by taking into consideration the principle of critical thinking.

In order to make this course more useful for the students, the results of this study suggests some changes. In the process of renewing the curriculum of the academic reading course taught by the Department of Post-preparatory English at Hacettepe University, the expectations and the requirements of the content course teachers should also be considered. There were some important differences in terms of the expectations and the requirements of the content course teachers related to the Academic reading course, so, there may be a need to provide different reading types as supplements to meet the needs of the different departments.

In order to improve the required academic reading skills of students, the findings of this study suggest increasing students' knowledge of academic vocabulary to help them read better in their courses. The content course teachers stated that the lack of vocabulary knowledge causes the most difficulty for students. As a suggestion, the majority of the interviewees declared that the academic reading curriculum in the department of post-preparatory English should be revised to include academic vocabulary training. One way to do this is by selecting reading materials relating to the departmental needs. In addition, the interviewees stated that

strategy training should continue to emphasize reading to understand the gist, and guessing the meaning of unknown words.

Another suggestion for improving the Academic reading course would be to develop content-based language courses in conjunction with content courses. Content-based instruction is an approach to language teaching with the purpose of helping learners be successful in EAP and ESP courses in their schools (Snow, 2001). Larsen-Freeman (2000) extended this definition by describing content-based instruction as an integration of language learning, and especially academic content, which provides learners with opportunities in a natural environment. In content-based instruction there are several cited models, but the most useful model in a university-context like Hacettepe University is the "adjunct model." This model aims to link language and content courses by providing opportunities for learners to study both content and language simultaneously and explicitly. The adjunct model focuses on language in a curriculum which is based on linking the subject of a content course to language related skills and abilities, considering learners' needs and expectations. Language professionals have turned toward content-based instruction as a practical approach for language learning and teaching as a way to teach content and language learning, provide a good environment to learn, enrich English for Specific Purposes (ESP) and English for Academic Purposes (EAP) curricula, and increase student and teacher motivation.

For example, providing an adjunct course in conjunction with an economics course that requires extensive reading of its students would be ideal for helping economics students meet the academic English reading demands of their disciplinary

course work, and it would also serve to promote further needed cooperation between content and English language teachers (Spack, 1988).

Limitations of the Study

Due to time limitations, only the content teachers from the 100% English-medium departments were chosen as the participants of this study. If the students in other departments and the instructors in the Department of Post-preparatory English had been able to be included in the study, a broader perspective on the requirements or the possible problems could have been obtained. Similarly if teachers from other faculties had been included, a wider comparative perspective could have been had obtained.

Another limitation for this study was that the content teachers in the departments do not seem to have an adequate general impression of their students' current reading abilities. Moreover, content course teachers couldn't provide information about reading volume and speed required in content courses. Nevertheless, their data are considered to be useful, since they give accurate information about the extent of the students' actual reading needs in each department.

Suggestions for Further Study

This study focused on the academic reading needs of students in 100% English-medium departments at Hacettepe University from the perspectives of content course teachers. This study did not take into consideration the needs of the students from their own perspectives or the problems that the instructors of the DPPE face while teaching academic reading.

Further studies can be done in order to determine the needs or problems both the students and the instructors of the DPPE face in the reading courses. The requirements of the disciplines that offer 30% of their instruction in English may also be taken into consideration in further research, and thus allow for a wider discussion of possible differences across departments.

Conclusion

All of the participant content course teachers agree that academic reading is very important for success in university education. Although content teachers in the eight English-medium departments declared that mastering academic reading is a major component of academic success, the results of this study indicated that students fail to live up to the expectations of the content course teachers. In terms of reading requirements, there are some differences among departments, and in order to improve the academic reading course some of the suggestions can be taken into consideration at Hacettepe University.

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INFORMED CONSENT FORM

Dear instructor,

I have been working in Hacettepe University, School of Foreign Languages, and Department of Post-preparatory English since 2001. Currently, I'm doing my Master's degree at Bilkent University, Faculty of Humanities and Letters, in Teaching English as a Foreign Language Program.

The purpose of the following questionnaire is to investigate content course teachers' perceptions and expectations about the reading abilities of their students so that the teachers at the Department of Post-preparatory English can prepare students in accordance with the expectations of the content course teachers. The information gathered by this questionnaire will provide an important source for the future curricular developments for the Academic Reading course in the Department of Post-preparatory English.

This questionnaire has four parts:
-Part A-questions about your background,
-Part B-questions about a course you teach in which instruction is 100% English,
-Part C-questions about your expectations about the academic reading course,
-Part D-general comments.

You are not required to fill in your name, and all responses will be kept strictly confidential. By completing this questionnaire, it is assumed that you give permission to use your answers in this study. If you have any questions, please feel free to contact me, or my advisor. I would like to thank you in advance for your cooperation and for spending your valuable time for my study.

Best regards.

N. Aylin Eroğlu	Dr. Susan Johnston
Hacettepe University	(Thesis advisor)
School of Foreign Languages	Director of M.A. TEFL Program
Department of Post-preparatory English	Bilkent University
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QUESTIONNAIRE

A. Personal Information
  1. Faculty
  Please indicate your department by checking the spaces below.
      a. Faculty of Economics and Administrative Sciences
         (   ) Department of Economics (English)
         (   ) Department of Business Administration (English)
         (   ) Department of International Relations (English)
      b. Faculty of Engineering
         (   ) Department of Chemical Engineering (English)
         (   ) Department of Electrical and Electronics Engineering (English)
         (   ) Department of Nuclear Engineering (English)
      c. Faculty of Medicine
         (   ) Medicine (English)
      d. Faculty of Science
         (   ) Department of Chemistry (English)
  2. Academic title
      a. Lecturer
      b. Associate Professor
      c. Professor
      d. Other:_____

  3. How long have you been teaching in your profession?
      a. Less than one year
      b. 1-5 years
      c. 6-10 years
      d. 11- 15 years
      e. 16-20 years
      f. More than 20 years
  4. How long have you been teaching at Hacettepe University?
      a. Less than one year
      b. 1-5 years
      c. 6-10 years
      d. 11-15 years
      e. 16-20 years
      f. More than 20 years

B. Specific Course Information
     For this section, please choose one course which you teach regularly at the undergraduate level and which you teach only in English.

    5. Title of your course
       _____

6. Type of your course: (   ) Theoretical   (   )Applied   (   )Seminar
                          (   ) Theoretical/Applied   (   )Laboratory   (   )
                 Other _____
7. Average number of students in the course:
        a. 10-20 students
        b. 21-30 students
        c. 31-40 students
        d. 41-50students
        e. 51-60 students
        f. More than 60 students

8. Undergraduate students in your course need to read in English for their academic work. Please circle the number corresponding to your answer.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

9. Which of the following types of material in English are assigned as required reading in your course for undergraduate students? (For each question please circle the number corresponding to your answer.)

	Never	Rarely	Sometimes	Usually	Always
1) Course books	1	2	3	4	5
2) Lecture notes and handouts	1	2	3	4	5
3) Articles in weekly magazines or newspapers	1	2	3	4	5
4) Reference books (encyclopedia, etc)	1	2	3	4	5
5) Articles from professional journals	1	2	3	4	5
6) Instruction manuals, user manuals, booklets	1	2	3	4	5
7) Graphs, diagrams, tables	1	2	3	4	5
8) Reports	1	2	3	4	5
9) Information from the Internet (e-mail messages etc)	1	2	3	4	5
10) General information	1	2	3	4	5
11) Examination items	1	2	3	4	5

Others (Please specify):

_____

C. Teachers' Expectations:

10. How would you rate the training that the Department of Post-preparatory English gives your students in the Academic Reading Course? Please circle the number corresponding to your answer.

Very Appropriate	Appropriate	Somewhat Appropriate	Not Appropriate
1	2	3	4

11. By taking into consideration your own experience, which of the following do you think are <u>IMPORTANT</u> and should be included into the program of the Academic Reading Course (ING 123-124) to help students prepare for the content courses in your own department? (For each question please circle the number corresponding to your answer.)

	Not important	Not very important	Important	Very important
1) Academic vocabulary training	1	2	3	4
2) General vocabulary training	1	2	3	4
3) Training on reading strategies (e.g. skimming, scanning)	1	2	3	4
4) Training on text organization (e.g. recognizing main ideas, specific details, etc.)	1	2	3	4
5) Readings tailored to specific academic fields (e.g. articles on economics, medicine, engineering or chemistry)	1	2	3	4
6) Readings on general topics such as world news, book/movie reviews, etc.	1	2	3	4

12. The following framework of "knowledge structures" (Mohan, 1990) has been widely used to describe typical kinds of reading from many academic areas. A table of these knowledge structures and how they might appear in reading topics from a course in Economics is given below. I would like to know which of these kinds of reading content are typical of your own academic area and what types of readings are most difficult for your students? For each question please circle the number corresponding to your answer.

The knowledge framework	
CLASSIFICATION/ CONCEPTS	**Example**: Types of industry in İzmit
PRINCIPLES	**Example**: Applying the principle of supply and demand to production.
EVALUATION	**Example**: Judging the impact of housing redevelopment in İzmit
DESCRIPTION	**Example**: The location of industry in İzmit
SEQUENCE	**Example**: Year by year growth of industrial activity along the industrial framework
CHOICE/ DECISION	**Example**: Choosing the location of an economic activity

A) The kinds of reading content that are typical of my own academic area:

	Very typical	Typical	Sometimes appear	Rare
1) Classifications/Concepts	1	2	3	4
2) Principle	1	2	3	4
3) Evaluation	1	2	3	4
4) Description	1	2	3	4
5) Sequence	1	2	3	4
6) Choice/Decision	1	2	3	4

B) Our students have most difficulty with the following knowledge structure types:

	Most difficulty	Some difficulty	With effort	No difficulty
1) Classifications/Concepts	1	2	3	4
2) Principle	1	2	3	4
3) Evaluation	1	2	3	4
4) Description	1	2	3	4
5) Sequence	1	2	3	4
6) Choice/Decision	1	2	3	4

D. If you have any further comments about your expectations and suggestions related to the Academic Reading course in accordance with the needs of the students in your department besides the ones expressed in the questionnaire, please indicate them below.

_____
_____
_____
_____
_____
_____

SAMPLE INTERVIEW TRANSCRIPTION AND CODING

Interview Questions

1. What are your expectations from students who have taken the Academic
    Reading course from the Department of Post-preparatory English?

2. Can students respond to your expectations?

3. What are the difficulties in reading that students face in your course?

4. What kind of a solution can you suggest for the problems?

Görüşme Soruları

1. Akademik Okuma Becerileri dersini almış ya da almakta olan öğrencilerden
    ne gibi beklentileriniz var?

2. Öğrenciler bu beklentilerinize cevap verebilitorlar mı?

3. Öğrencierinizin derslerde okumayla ilgili karşılaştıkları zorluklar nelerdir?

4. Bu problemlere ne gibi çözümler önerebilirsiniz?

INTERVIEW TRANSCRIPTION	CODİNG
Department: Chemistry Name of the course: General Chemistry Participant number: 1 I: Interviewee R: Researcher	
R: Hello, could you introduce yourself, please. I: Research assistant in Chemistry Department R: My first question is, you know that we, as the Department of Post-preparatory English, are teaching Academic Reading course to the first year students. What are your expectations related to this course? I: As our department is a 100% English-medium department, <u>our textbooks are in English</u>. In some courses teachers feel the need <u>to make explanations in Turkish</u>, although what students need to study is in English. Therefore, I'm expecting that students' <u>understanding the gist</u> without trying to understand the meaning of each word. R: So, do students live up to your expectations? Or, if they can, how much? I: I <u>don't think that they can live up to our expectations</u>. In the exams, may be only because they are nervous, they are asking what the question means. They make us <u>translate the questions into Turkish</u> in the exam. But, if they understood the question they wouldn't ask what it meant. R: So, students have difficulty in understanding the questions in the exam? I: Yes, but may be they are just asking for the purpose of confirmation. In the class we are first teaching the class in English, but then, they again ask <u>for Turkish translation</u>. If we don't translate into Turkish, they have difficulty in conducting the experiments in the laboratory classes. R: What kind of difficulties are these? I: I don't <u>understand the subject properly</u>. They feel the need to understand the meaning of each word when they are reading. <u>They are not trying to guess from the context. They cannot understand the text, if they don't know the meaning of several words in it.</u> R: What do you suggest for solving this problem? I: When we were in the Prep class, we didn't use dictionaries while we were reading a text. <u>We were just trying to understand the gist without paying attention to the meaning of individual words in a text.</u> This activity was useful.	Textbooks in English Explanation in Turkish Strategy training Students cannot perform well Turkish translation Turkish translation Difficulty in understanding without Turkish translation Inadequacy in using reading strategies Strategy training

APPENDIX D

2001 PREP FINAL EXAM

From Sun to Snow

They call Jamaica the 'Island in the Sun', and that is *my* memory of ill. *Of* sunshine, warmth and abundant fruit growing everywhere, and *of* love. I was born on 2 April 1960 in St Andrews in Kingston. There were two sisters ahead *of* me in the family, and though *of* course I didn't know it, there was excited talk of emigration, possibly to Canada is more usually to England, the land *of* opportunity. I guess that plans were already being made when I was born, for a year or later *my* Dad left for London. Two years after that, when he had saved enough money, *my* Mum went as well and *my* sisters and I were left in the care *of my* grandmother. I stayed with her, in her house near the centre *of* Kingston, until I was seven years old. *My* grandmother, therefore, shaped *my* life, and I believe I am all the better for it.

This was all fairly normal. Emigrating to better yourself was a dream for most Jamaicans, a dream many were determined to. Families were dose and grandmothers were an important part of family life so, when the mass *la* emigrations began, it seemed perfectly right and natural for them to take over the running *of* the families left behind.

After all, they had the experience.

Grandmothers are often strict, but they usually also spoil you. At least, that is the way it was with mine. She ran the family like a military operation: each *of* us, no matter how young, had our tasks. I remember that we didn't have a tap in the house, but used a tap from which we had to fill two barrels in our garden. Every morning, before we were*;* to school, we all had to take a bucket appropriate to our size and run a relay from the communal tap to the barrels until they were full. In the beginning, when I was two or three, I couldn't reach the barrel - but I still had to join in. *My* sister had to sweep the yard before they went to school. *My* grandmother would give orders to the eldest and these were as I got older I found this particularly annoying! But I can ten you: no one avoided their duties.

My Dad came over from England to see how we were getting on. I hadn't known him when he had left for Britain, but when I saw him I somehow knew that he was *my* father. He ta1ked to us about the new country, about snow, about the huge city, and we all wanted to know more, to see what it was like. He also told me that I now had a younger brother, which made me feel excited and wonder what he could be like. I didn't know it at the time, but he had come to prepare us for the move to England. Six months later *my* grandmother told me that I was going to join *my* parents and that

she, too, was emigrating. It was the end *of my* time in the Caribbean, *of* the sheltered, want, family life that I had known there, and the beginning *of* a new and exciting.

London was strange and disappointing. There was no gold on the payments, as the stories in Jamaica had indicated. Back home it had always been warm. Everyone was friendly and said 'Hello' when you passed by on the street; in Kingston yon knew everybody and they knew you. Here, it wasn't like that. The roads were busy; the buildings were grey and dull, with many tall, high-rise locks. It was totally unlike Jamaica, the houses all small and packed dose together. In *my* grandmother's house I had a big bedroom; here I had to share. At that age it was a great disappointment.

Worse was to come, because there followed a very cold winter, and I had never felt cold in *my* life before. Then came the biggest shock: snow. White flakes came out *of* the sky and Dad smiled, pointed and said, 'That's snow!' it rushed outside, Joked up and opened *my* mouth to let the flakes drop in. The snow settled on *my* tongue and it was so cold than it cried. *My* toes lo stall feeling, and at the primary school that we attended it wasn't allowed to wear long trousers at *my a*ge. The teachers made us go out to play in the playground a Joined in with all the fun, sliding around in the snow, throwing snowba1ls, all the usual things. Suddenly, as *my* shoes and socks got soaking wet and frozen, there came an excruciating pain and it cried with the intensity *of* ill. It didn't know what was happening to me.

Changing Career Trends

A hundred years ago in most of the world, people didn't have much choice about the work that they would do. If their parents were farmers, they became farmers. The society-and tradition-determined their profession. Twenty years ago in many countries, people could choose their livelihood. They also had the certainty of a job for life, but they usually couldn't choose to change from one employer to another or from one profession to another. Today, this is not always the case. Career counselors tell us that the world of work is already changing fast and will change dramatically in the next 25 years.

Job Security

Increasingly, people need to be prepared to change jobs several times in their lifetime. The situation varies from country to country, but in general there is less job security worldwide. In Europe, the unemployment rat e is ten percent, and many people have to accept part-time jobs while they wait to find fulltime employment The United States has the fastest-changing job market. In 1994, six million Americans quit their job to take a different post. In 1999, the number rose to seventeen million. Even in Japan, where people traditionally had a very secure job for life, there is now no promise of a lifetime job with the same company.

The Effect of Insecurity

On the surface, it may seem that lack of job security is something undesirable. Indeed, pessimists point out that it is certainly a cause of stress. Many people find an identity-a sense of self-through their work. When they lose their job (or are afraid of losing it), they also lose their self-confidence, or belief in their own ability. This causes worry and depression. In Japan, for example, the daily newspaper Asahi reports a sudden rise in the number of businessmen who need psychological help for their clinical depression. However, this decrease in job security may not necessarily be something bad. It is true that these days, workers must be more flexible-able to change to fit new situations. But optimists claim that flexible people are essentially happier, more creative, and more energetic than people who are rigid.

Job Hopping

Jumping from job to job (or "job hopping") has always been more common in some professions such as building construction and not very common in other professions such as medicine and teaching. Today, job hopping is increasingly common in many fields because of globalization, technology, and a movement from manufacturing to services in developed countries. For example, people with factory jobs in industrial nations lose their jobs when factories move to countries where the pay is lower. The workers then need to upgrade their skills to find a new job. This is stressful, but the

new job is usually better than the old one. Because technology changes last, workers need continuing education if they want to keep up with the field. Clearly, technology provides both challenge and opportunity.

Telecommuting
In many ways, technology is changing the wav people work. There are advantages and disadvantages to this. In some professions, for instance, telecommuting is now possible. People can work at home for

some-or all-of the week and communicate by computer, telephone, and fax. An advantage of this is that it saves them from the stress of commuting to the workplace. It also allows them to plan their own time. On the other hand, it is difficult for some people to locus on work when they are at home. The refrigerator, TV, and their children often distract them. Telecommuters must have enormous discipline and organizational skills. Technology is changing the way people work in another way-in the use of cell-phones, beepers, and pagers. There is an advantage: customers and clients have access to businesspeople- anytime anywhere. However, there is also a drawback: many businesspeople don't want to be available day and night. They prefer to have a break from their work life.

Workaholism
In the new millennium, as in the 1990s, workaholism will continue to be a fact of life for many workers Workaholics are as addicted to their work as other people are to drugs or alcohol. This sounds like a problem, but it isn't always. Some people overwork but don't enjoy their work. They don't have time for their family, friends, or leisure activities such as hobbies, sports, and movies. These people become tired, angry, and depressed. The tension and stress often cause physical symptoms such as headaches and stomach ulcers. However, other people love their work and receive great pleasure from it. These people appear to be overworking but are actually very happy. Psychologists tell us that the most successful people in the changing world of work are flexible, creative, disciplined, and passionate about their work. But they are also people who make time for relaxing activities and for other people. They enjoy their work and enjoy time away from it, too.

The Human Brain - New Discoveries

Parts of the Brain
Most of us learn basic facts about the human brain in our middle or high school biology classes. We study the subcortex, the "old brain," which is found in the brains of most animals and is responsible for basic functions such as breathing, eating, drinking, and sleeping. We learn about the neocortex, the "new brain," which is unique to humans and is where complex brain activity takes place. We find that the cerebrum, which is responsible for all active thought, is divided into two parts, or hemispheres. The left hemisphere, generally, manages the right side of the body; it is responsible for logical thinking. The right hemisphere manages the left side of the body; this hemisphere controls emotional, creative, and artistic functions. And we

learn that the corpus callosum is the "bridge" that connects the two hemispheres. Memorizing the names for parts of the brain might not seem thrilling to many students, but new discoveries in brain function are exciting. Recent research is shedding light on creativity, memory, maturity, gender, and the relationship between mind and body.

Left Brain/Right Brain: Creativity

Psychologists agree that most of us have creative ability that is greater than what we use in daily life. In other words, we can be more creative than we realize! The problem is that we use mainly one hemisphere of our brain-the left. From childhood, in school, we're taught reading, writing, and mathematics; we are exposed to very little music or art. Therefore, many of us might not "exercise" our right hemisphere much except through dreams, symbols and those wonderful insights in which we suddenly find the answer to a problem that has been bothering us-and do so without the need for logic. Can we be taught to use our right hemisphere more? Many experts believe so. Classes at some schools and books (such as The Inner *Game of Tennis* and *Drawing on the   Right S de of the Brain)* claim to help people to "silence" the left hemisphere and give the right a chance to work.

Memory - True or Fa/se?

In the 1980s in the United States, there were many cases of adults, who suddenly remembered, with the help of a psychologist, things that had happened to them, in childhood. These memories had been repressed-,held back-for many years. Some of these newly discovered memories have sent people to prison. As people remember crimes (such as murder or rape) that they saw or experienced as children, the police have re-opened and investigated old criminal cases. In fact, over 700 cases have been filed that are based on these repressed memories. However, studies in the 1990s suggested that many of these might be *false* memories. At a 1994 conference at Harvard Medical School, neuroscientists discussed how memory is believed to work. It is known that small pieces of a memory (sound, sight, feeling, and so on) are kept in different parts of the brain; the limbic system, in the middle of the brain, pulls these pieces together into one complete memory. But it's certain that people can "remember" things that have never happened. Even a small suggestion can leave a piece of memory in the brain. Most frightening, according to Dr Michael Nash of the University of Tennessee, is that "there may be no structural difference" in the brain between a false memory and a true one.

The Teen Brain
Parents of teenagers have always known that there is something, well, *different* about the teen years. Some parents claim that their teenage children belong to a different species. Until recently, neuroscience did not support this belief. The traditional belief was that by the age of 8 to 12, the brain was completely mature. However, very recent studies provide evidence- that the brain of a teenager differs from that of both children- and adults. According to Jay Giedd of the National Institute of Mental Health, "Maturation does not stop at age 10, but continues, into the teen years" and beyond. In fact, Giedd and his colleagues found that the corpus callosum "continues

growing into your 208,". Because, it is believed, the corpus callosum is involved in sell-awareness and intelligence, the new studies imply that teens may not be as fully self-aware or as intelligent as they will be later. Other researchers, at McLean Hospital in Massachusetts, have found that teenagers are not able (as adults are) to "read" emotions on people's faces.

Differences in Ma/e and Fema/e Brains
Watch a group of children as they play. You'll probably notice that the boys and girls play differently, speak differently, and are interested in different things. When they grow into men and women, the differences do not disappear. Many scientists are now studying the origins of these gender differences. Some are searching for an explanation in the human brain. Some of their findings are interesting. For example, they've found that more men than women are left-handed; this reflects the dominance of the brain's right hemisphere. By contrast, more women listen equally with both ears while men listen mainly with the right ear. Men are better at reading a map without having to rotate it. Women are better at reading the emotions of people in photographs.
One place to look for an explanation of gender differences is in the hypothalamus, just above the brain stem. This control s anger, thirst, hunger, and sexual desire. One recent study shows that there is a region in the hypothalamus that is larger in heterosexual men than it is in women and homosexual men. Another area of study is the corpus callosum, the thick group of nerves that allows the right and left hemispheres of the brain to communicate with each other. The corpus callosum is larger in women than in men. This might explain the mystery of "female intuition," which is supposed-to give women greater ability to read and understand emotional clues.

Wired for Music?
It might seem logical to believe that our appreciation of music is *learned* that nurture, not nature, determines this. However, it is now clear that nature also plays a role; recent studies indicate that the human brain is "wired" for music. At the University of Toronto, Canada, psychologists have been studying infants age 6-9 months. Surprisingly, these babies smile when researchers play consonant (pleasant) music. but they appear to hate dissonant music. As adults, most people can remember only a few poems or pieces of prose but have the capacity to remember at least dozens of musical tunes and to recognize hundreds more. Even more interesting, perhaps, is the possibility that music might actually improve some forms of intelligence. A 1999 study proves that music can help children do better at math-not, oddly, other subjects, just math. It is probably not surprising that much of the brain activity that involves music takes place in the temporal lobes. It may be more surprising to learn that the corpus callosum might also be involved. Researchers at Beth Israel Deaconess Medical Center in Boston have discovered that the front part of the corpus callasum is actually larger in musicians than in non-musicians.

The Mystery of the Mind-Body Relationship

There is more and more evidence every day to prove that our minds and bodies are closely connected. Negative emotions, such as loneliness, depression, and

helplessness, are believed to cause a higher rate of sickness and death. Similarly, it's possible that positive thinking can help people neither remain in good physical health nor become well faster after an illness. Although some doctors are doubtful about this, most accept the success of new therapies (e.g., relaxation and meditation) that help people with problems such as ulcers, high blood pressure, insomnia (sleeplessness), and migraine headaches.

The Concept of Law

The Idea of Law A

The idea of "law" exists in every culture. All societies have some kind of law to keep order and to control the interactions of people with those around them. The laws of any culture tell people three things: what they can do (their rights), what they must do (their duties), and what they may not do (illegal actions). In addition, there are usually specific types of punishment for those who break the law.

What Prevents Crime?

Although all societies have laws, not all have the same idea of justice-what is "right" and "wrong" and how "wrong" should be punished. In most Western cultures, it is thought that punishing criminals will prevent them from committing other crimes. Also, it is hoped that the fear of punishment will act as a deterrent that prevents other people from committing similar crimes; in other words, people who are considering a life of crime will decide against it because of fear of most non-Western cultures, by contrast, punishment is not seen as a deterrent. A thief, for example, may be ordered to return the things he has stolen instead of, as in Western societies, spending time in prison.

Kinds of Law

Another difference in the concept of justice lies in various societies' ideas of ,what laws are. In the West, people consider "laws" quite different from "customs.-". There is also a great contrast between "sins" (breaking religious laws) and "crimes" (breaking laws of the government). In many non-Western cultures, however, there is little separation of customs, laws, and religious beliefs; in other cultures, these three may be quite separate from one another, but still very much different from those in the West. For these reasons, an action may be considered a crime in one country but be socially acceptable in others. For instance, although a thief is viewed as a criminal in much of the world, in a small village where there is considerable communal living and sharing of objects, the word thief may have little meaning. Someone who has taken something without asking is simply considered an impolite person.

Civil Law and Society

Most countries have two kinds of law: criminal and civil. People who have been accused of acts such as murder or theft are heard in the criminal justice system, while civil justice deals with people who are believed to have violated others' rights. The use of the civil system reflects the values of the society in which it exists. In the United States, where personal, individual justice is considered very important, civil law has become "big business." There are over 700,000 lawyers in the United States,

and many of them keep busy with civil lawsuits; that is, they work for people who want to (bring legal action against) others. If a man falls over a torn rug in a hotel and breaks his arm- for instance, he might decide to sue the hotel owners so that they will pay his medical costs. In a country like Japan, by contrast, there is very little use of the civil justice system. Lawsuits are not very popular in Japan, where social harm6ny (peaceful agreement) is eve n more important than individual rights, and where people would rather reach agreements outside court.

The Judgment of Disputes
In most cultures, when people cannot reach agreement on their own, a judge might be called on to make a decision. In North America, a case might be heard in a court of law before a judge chosen by the government and, perhaps, a group of citizens in a jury. In some tribal societies, however, a man or a woman who is thought to have special supernatural power might be chosen by the people to judge disputes. In the 1950s, among the Gisu people of Uganda, the inhabitants of a village had great faith in a man who was believed to have the ability to cause smallpox, a serious disease. On Sundays, they went to his "court," where he charged a fee for his judgments of cases. Although the Ugandan government considered this practice illegal, he was very popular with the people.

Social Justice
In societies where courts and judges simply don't exist, self-help is necessary and socially acceptable in disputes. If a cow has been stolen, the owner's friends and relatives may get together and help him get the animal back. In small villages, everyone, in a sense, becomes a judge; in such societies, where people's neighbors are also friends, members of their families, or co-workers, the opinions *of* the villagers are very important. Social activities can serve both as powerful punishment for and is strong deterrent *to* crime.

Modern and Traditional Justice
In some countries, traditional and modern justice exist side by side. A good example *of* this combination can be found in Tanzania where people usually take their legal disputes first *to* family leaders or the' representatives of their village age set a group of people of about the same age. If the disagreement
cannot be settled by these leaders, then the case is taken *to* a modern court. The people who are part of the dispute will argue until both sides agree, for the goal is to restore a situation of balance and social harmony. Another example occurred in the United States in the summer of 1994. Two Indian teenagers pleaded guilty to attacking a man in Washington State. Instead of sentencing the boys to prison, the judge sent them back *to* their people in Alaska for traditional tribal punishment. It was believed that prison would turn them into hardened criminals but that tribal justice might help them become functioning members of society.

READING SAMPLES FROM CONTENT COURSES

Medicine

The Molecular Logic of Life

Living organisms are composed of lifeless molecules. When these molecules are isolated and examined individually, they conform to all the physical and enemies allows that describe the behavior of inanimate matter. Yet living organisms possess extraordinary attributes not exhibited by any random collection of molecules. In this chapter, we first consider the properties of living organisms that distinguish them from other collections of matter, and then we describe a set of principles that characterize all living organisms. These principles underlie the organization of organisms and their cells, and they provide the framework for this book. They will help you to keep the larger picture in mind while exploring the illustrative examples presented in the text.

The Chemical Unity of Diverse living Organisms

What distinguished living organisms from inanimate objects? First is their degree of chemical complexity and organization. Thousands of different molecules make up a cell's intricate internal structures (Fig. I). By contrast, inanimate matter-clay, sand, rooks, seawater-usually consists of mixtures of relatively simple chemical compounds.

Second, living organisms extract, transform, and use energy from their environment (Fig. l-lb), usually in the form of chemical nutrients or sunlight. This energy enables organisms to build and maintain their intricate structures and to do mechanical, chemical, osmotic, and other types of work. Inanimate matter does not use energy in a systematized, dynamic way to maintain structure or to do work; rather, it tends to decay toward a more disordered state, to come to equilibrium with its surroundings.

The third attribute of living organisms is the capacity for precise self-realization and self-assembly, a property that is the quintessence of the living state (Fig. I-le). A single bacterial cell placed in a sterile nutrient medium can give rise to a billion identical "daughter" cells in 24 hours. Each of the cells contains thousands of different molecules, some extremely complex; yet each bacterium is a faithful copy of the original, its construction directed entirely from information contained within the genetic material of the original cell.

Although the ability to self-replicate has no true analog in the non-living world, there is an instructive analogy in the growth of crystals in saturated solutions. Crystallization produces more material identical in lattice structure to the original "seed" crystal. Crystals are much less complex than the simplest living organisms, and their structure is static, not dynamic as are living cells. Nevertheless, the ability of crystals to "reproduce" themselves. Some characteristics of living matter. (a)

Microscopic complexity and organization are apparent in this colorized thin section of vertebrate muscle tissue, viewed with the electron microscope. (b) A prairie falcon acquires nutrients by consuming smaller bird. (c) Biological reproduction occurs with near-perfect fidelity.

Foundations of Biochemistry

Erwin Schrödinger 1887-1961

Diverse living organisms share common chemical features. Birds, beasts, plants, and soil microorganisms share with humans the same basic structural units (cells) and the same kinds of macromolecules (DNA, RNA, proteins) made up of the same kinds of monomeric subunits (nucleotides, amino acids). They utilize the same path ways for synthesis of cellular components, share the same genetic code, and derive from the same evolutionary ancestors. ("The Garden of Eden" (detail), by Jan van Kessler, the Younger (1626-1679).)

Led the physicist Erwin Schrödinger to propose in his famous essay "What Is Life?" that the genetic material of cells must have some of the properties of a crystal. Schrödinger's 1944 notion (years before our modern understanding of gene structure) describes rather accurately some of the properties of deoxyribonucleic acid, the material of genes.

Each component of a living organism has a specific function. This is true not only of macroscopic structures, such as leaves and stems or hearts and lungs, but also of microscopic intracellular structures such as the nucleus or chloroplast and of individual chemical compounds. The interplay among the chemical components of a living organism is dynamic; changes in one component cause coordinating or compensating changes in another, with the whole ensemble displaying a character beyond that of its individual constituents. The collection of molecules carries out a program, the end result of which is reproduction of the program and self-perpetuation of that collection of molecules; in short, life.

Biochemistry Explains Diverse Forms of Life in Unifying Chemical Terms

If living organisms are composed of molecules that are intrinsically inanimate, how do these molecules confer the remarkable combination of characteristics we catlike? How can a living organism be more than the sum of its inanimate parts? Philosophers once answered that living organisms are endowed with a mysterious and divine life force, but this doctrine, called vitalism, has been firmly rejected by modern science. That! Study of biochemistry shows how the collections of inanimate molecules that constitute living organisms interact to maintain and perpetuate life animated solely by the chemical laws that govern the nonliving universe.

Living organisms are enormously diverse (Fig. 1-2). In appearance and function, birds and beasts, trees, grasses, and microscopic organisms differ greatly. Yet, biochemical research has revealed that all organisms are remarkably alike at the cell war and chemical levels. Biochemistry describes in molecular terms the structures, mechanisms, and chemical processes shared by all organisms, and provides organizing principles that underlie life in all of its diverse forms, principles we shall refer to collectively as *the molecular logic of life*. Although biochemistry provides

important insights and practical applications in medicine, agriculture, nutrition, and industry, its ultimate concern is with the wonder of life itself.

Despite the fundamental unity of life, very few generalizations about living organisms are absolutely correct for every organism under every condition. The range of habitats in which organisms lye, from hot springs to Arctic tundra, from animal intestines to college dormitories, is matched by a correspondingly wide range of specific biochemical adaptations, achieved within a common chemical framework. For the sake of clarity, we will sometimes risk certain generalizations, which, though not perfect, remain useful; we will also frequently point out the exceptions that illuminate scientific generalizations.

All Macromolecules Are Constructed from a Few Simple Compounds

Most of the molecular constituents of living systems are composed of carbon atoms covalently joined with other carbon atoms and with hydrogen, oxygen, or nitrogen. The special bonding properties of carbon permit the formation of a great variety of molecules. Organic compounds of molecular weight (also called relative mole war mass, *Mr.)* 1 less than about 500, such as amino acids, nucleotides, and monosaccharide, serve as **monomer subunits of macromolecules:** proteins, nucleic acids, and polysaccharides. A single protein molecule may have 1,000 or more amino acids, and deoxyribonucleic acid has millions of nucleotides.

Each cell of the bacterium *Escherichia coli (E. coli)* contains several thousand kinds of organic compounds, including a thousand Afferent proteins, a similar number of different nucleic acid molecules, and hundreds of types of carbohydrates and lipids. In humans there may be tens of thousands of different proteins, as well as many types of polysaccharides (chains of simple sugars), a variety of lipids, and many other compounds of lower molecular weight.

To purify and to characterize thoroughly all of these molecules would be an insuperable task were it not for the fact that each class of macromolecules (proteins, nucleic acids, polysaccharides) is composed of a small, common set of monomeric subunits. These monomeric subunits can be covalently linked in a virtually limitless variety of sequences (Fig. 1 -3), just as the 26 letters of the English alphabet can be arranged into a limitless number of words, sentences, and books.

Deoxyribonucleic acids (DNA) are constructed from only four 00ferent kinds of simple monomeric subunits, the deoxyribonucleotides. **Ribonucleic acids (RNA)** are composed of just four types of ribonucleotides. **Proteius** are composed of 20 different kinds of amino acids. The eight nucleotides from which all nucleic acids are built and the 20 different amino acids from which all proteins are built are identical in all living.

The terms used to indicate the size of a molecule are often confused. We use molecular weight or *Mn* relative molecular mass, a dimensionless ratio of the mass of a molecule to one-twelfth the mass of 12C. The size of a molecule can also be correctly given in terms of molecular mass *(m),* which has units of daltons (Da) or atarnie mass units. A molecule should never be described as having a molecular weight or *Mn* (a dimensionless property) expressed in daltons or atomic mass units.

Consulting an authority as a way of knowing

The most common way in which we answer our questions is to consult an authority. We ask someone who knows. If we have a question, we look up the answer in an encyclopedia, we ask a friend who knows, we call the doctor, we ask a lecturer, or religious 1eader, or the police, or the umpire. We are used to asking authorities. We refer to articles in journals or the newspaper, or look for a book on the subject in the library or bookshop.

So long as the authority consulted does in fact know the answer, it is most efficient to refer our questions to an authority. The problem with consulting authority is a problem of selection. On what bases do we choose our authorities? The only real basis should be that the authority has the knowledge we need. Does

The authority knows what we want to know? If we plan to consult an authority in order to answer a question, we want to be sure that the authority is knowledgeable about that subject. That is where one of the problems of consulting authorities arises. While knowledge should be the criterion for choosing an authority, there are often other reasons. How does someone come to be seen as an authority?

Popularity or the possession of a particular talent seems to convey authority. Athletes are asked to promote products as diverse as razor blades and milk. Why is it that we pay more attention to Alan Shearer or Linford Christie than to the person next door? Advertising relies heavily on the fact that we will pay attention to heroes and superstars. Do you know that tall people are seen as more authoritative than short ones? It's a fact: that is, research has demonstrated that it is true. Do you know that well-dressed people are seen as more authoritative than shabbily-dressed people? It's a fact. To people raised in a western culture at this time, someone in a Iamb coat is seen to be particularly authoritative. It has not always been this way. In the past, parsons, country squires, or other community leaders were seen as authorities. The point is that certain characteristics-age, gender, class, clothing, height, tone of voice, accent-tend to influence whether we see people as authoritative. Characteristics which may have nothing to do with how much people know about a subject still affect our choice of the people we consider to be authorities.

Another way people come to be seen as authorities is by the positions they hold. In this case the person has authority because of position, rather than by virtue of knowledge or any other attribute. The police have authority to order you to stop, to leave your car, to answer certain questions. They have this authority because of their position, because they are police. Parents have authority over children. Judges have authority to pass sentence on law breakers. Priests, ministers, and rabbis have authority to marry people. Sometimes people who are given authority to do certain things are taken to be authorities on other subjects as well.

It can be confusing when someone who has authority in one area is taken to be, or presumes to be, an authority in others. In the past this could be quite

troublesome. Monarchs, by virtue of their power to imprison, tax, or kill, could make their opinion binding on the people; disagreement could bring death. Today we are unlikely to take the monarch's opinion on, let us say nutrition, to be authoritative. Persons with authority are seen to have *limited* authority. If we were having an argument about what is the best way to prepare for an examination we would probably not consult any of the authorities listed above- police, priests, parents, or monarchs. If we were to consult a teacher, someone who has a certain amount of authority to do certain things, we would be asking the teacher because we assumed that the teacher might know more about taking exams than other people.

The critical point here is that no matter how prominent the person, no matter how much authority and power someone may have on account of position, the opinion of that person on a subject in which they are not expert is of no more value than the opinion of any other person. Bishop may hold opinions about unemployment, taxation, and the way we raise families, the role of the government in foreign aid. These opinions, unless grounded in special knowledge relevant to each of the above areas, are of

For example, the hypothesis about amount of study and academic performance relates to students. The largest possible population would be all students in the world at any time past, present, and future. That would be an impossible population to sample. Y you may decide to limit your sample to students in English universities. That is still a very large and diverse population. You might decide to limit your focus to the students in your university. Finally, you might decide that making generalizations about all students everywhere is not so important and you are happy to settle for finding out what is happening in two history classes in your university.

Remember! It is perfectly legitimate to select any population as the object of your study.

The population about which you wish to generalize will attract your selection of a sampling procedure. Once you have decided about whom you want to be able to draw reliable conclusions, you are ready to select a sampling procedure. What other practical factors might help you to decide which population you wish to be able to generalize to? Think about time and money.

Types of sampling procedure

There are basically two types of sampling procedure: random and non-random. A random sampling procedure provides the greatest assurance that those selected are a representative sample of the larger group. If a non-random sampling procedure is used, one can only hope that those selected for study bear some likeness to the larger group.

Non-random sampling procedures

Non-random sampling procedures include accidental sampling, accidental quota sampling, purposive sampling, and systematic matching sampling. While

useful for many studies, non-random sampling procedures provide only a weak basis for generalization.

Accidental sampling

This sampling procedure involves using what is immediately available. A teacher studies his own class. A psychologist studies her own children. A nutritionist studies the impact of diet change on his children. A student studies the interaction patterns of the families of two friends and a cousin. These are all accidental samples. The persons, families, and classes studied were selected because they were available, not because they were known to be representative of some larger group.

Some people confuse accidental sampling with random sampling. Persons met at random, that are accidentally, do not comprise a random sample. The problem with accidental samples is that the researcher does not know in what ways the sample is biased. How is the sample a 'misleading representative of the' larger population of which information is desired? There is no way of checking this without doing a study of everyone, or a study of a properly drawn random sample. The people on a given street at a given time will be a biased sample of residents of that suburb. Such an accidental sample will not give you reliable information about the residents of the suburb. A questionnaire on attitudes towards abortion given to every tenth person encountered at a suburban shopping centre will not provide a reliable indication of the opinions of residents of the suburb. It will only tell you the opinions of people who shop at that place at that hour on that day of the week. If you are interested in the opinions of the residents of the suburb, an accidental sample of Tuesday morning shoppers will not provide the information.

Similarly, the families you know will be a biased sample of families in your city. They may be members of the same clubs, churches, political parties, or at similar stages in the family life cycle. In the same way students in a particular class or school will be a biased sample of students. Think of ways in which the students in your class would be a biased sample of students in your school. This is why *the results of a study of an accidental sample apply only to the sample studied.*

An accidental sampling procedure is appropriate if you do not intend to draw conclusions about a larger group on the basis of the group you study. Accidental samples are handy, require little extort, and are useful for many studies. They are particularly useful for pre-testing. The major disadvantage is that the findings of a study of an accidental sample are strictly limited to those studied.

GENERAL LABORATORY DIRECTIONS

Cleanliness

It is important to keep the equipment and the laboratory dean at all times.
(a) Glassware: This should be cleaned with a detergent, rinsed with tap water, and then with sail portions of distilled water.

(b) Desks and Reagent Bottles: These should be dined at the conclusion of each laboratory period.

(c) Shelf Reagents: If material is spilled on the shelves, dean it up immediately.

(d) Balance Room: Do not spill material in the balance case. Keep the balance room clean.

Use of Acids and Reagents

(a) No foreign objects of any kind (spatula medicine dropper, pipit) should be introduced into the reagent boles at any time.

I (b) when pouring acids from the desk reagent bottles do not lay the stopper on the desk. Hold it between the fingers.

(c) Reagents on the shelves are not to be taken to the desks. Pour what is needed of a dry reagent onto a watch glass or piece of paper. Liquids should either be poured into the vessel in which they will be used or into a small beaker for transfer. Replace stoppers and bottle caps when finished.

(d) Under no circumstances should a reagent, once removed from a stock battle, be resumed to the stock bole.

(c) As reagents are expensive, students should learn to estimate their needs and avoid waste.

EXPERIMENT NO 5

MOLECULAR WEIGHT - FREEZING-POINT LOWERING

The acid Ilion of a solute to absolvent, in general, lowers the freezing point of the solvent. *For* a given solvent, the freezing-point lowering is directly proportional to the condensation of parties dissolved in it For naphthalene, the solvent used in this experiment, the freezing point is lowered by 6.9° C *for* each mole of solute parties in ₁ kg of naphthalene. In this experiment, you will determine the molecular weight of sulfur dissolved in naphthalene by observing the freezing point of a $colonna that contains known masses of sulfur and naphthalene. From the observed freezing point lowering, you will be able to calculate the number of males of dissolved parties per kilogram of naphthalene, you can caleu1ate the mass of I mole of sulfur.

PROCEDURE
Assemble the apparatus shown in Figure
Be careful when inserting the thermometer into the two-hole stopper, (Lubricate well, use cheesecloth to protect your hands, and keep hands close together). Make sure that the temperature sca1e is visible from 70' C up. If necessary, slug the stopper with a razor.

On the platform balance, weigh out
On a piece of creased weighing paper (previously weighed) about LO g of naphtha-lene to the nearest 0.1 g. Carefu11y pour into the large test tube. Heat the water Until the naphthalene melts.

Thermometer Wire stirrer

Water bath

Then remove the burner, and allow
The naphthalene to coç1. Stir continuously. And record the thermometer reading every minute, starting at 85°C and stopping at 75°C. Replace the burner under the beaker, and adjust the flame very Iowa so that the water stays hot while you are weighing out the sulfur.

Take a piece of clean weighing paper about S cm on each cadge, and crease it along the diagonals to form a shallow depression. Using the platform balance, weigh cut on

this paper about 1 g of sulfur (neglect the mass of the paper).

Take another similar dean piece of creased weighing paper and the packet of sulfur to the analytical balance. Rest weighs the dean paper to the nearest 0.001 g. Then carefully add the sulfur, and reweigh (do not spill sulfur in the balance case).

Reheat the water in the beaker, if necessary, until the naphthalene has melted. Gently lift out the stopper assembly, and carefully add all the weighed surer to the 'molten naphthalene. Replace the stopper assembly, and stir vigorously until all the sulfur has dissolved. If the sulfur does not all dissolve, remove the thermometer-stirrer assembly and heat the sulfur- naphthalene mix carefully over a Bunsen-burner flame until the dowdiness just disappears. Do not overheat there is danger of fire [room the naphthalene vapor, which is flammable. Replace the test tube containing the sulfur-naphthalene solution, want a minute or so, and replace the thermometer stirrer assembly.

Remove the burner, ad alms the sulfur- naphthalene solution to cool. Stir continuously, and record the thermometer reading every minute, starting at Sac and stopping at 70°C.

(In dining out the test tube at the end of the experiment, heat the naphthalene until it just melts. This can be done in the yellow name of a burner if you lake care not lo heat the thermometer beyond its temperature range. Remove the stopper, and pour the molten naphthalene on a crumpled wad. When the naphthalene has solidified, throw both the paper and solid naphthalene into a rack. Do not pour liquid naphthalene into the sink.)

VOCABULARY LEVELS TEST
2000 WORD LEVEL

1. I'm glad we had this opp_____ to talk.
2. There are a doz_____ of eggs in the basket.
3. Every working person must pay income t_____.
4. The pirates buried the trea_____ on a desert island.
5. Her beauty and ch_____ had a powerful effect on men.
6. La_____ of rain led to a shortage of water in the city.
7. He takes cr_____ and sugar in his coffee.
8. Pup_____ must hand in their papers by the end of the week.
9. The rich man died and left all his we_____ to his son.
10. This sweater is too tight. It needs to be stret_____.
11. Ann intro_____ her boyfriend to her mother.
12. Teenagers often adm_____ and worship pop singers.
13. If you blow up that balloon anymore it will bu_____.
14. In order to be accepted into the university, he had to impr_____ his grades.
15. The telegram was deli_____ two hours after it had been sent.
16. The differences were too sl_____ that they went unnoticed.
17. The dress you're wearing is lov_____.
18. He wasn't very popu_____ when he was a teenager, but he has many friend now.

Home > VocabProfile > English > Output

WEB VP OUTPUT FOR FILE: Business administration

Recategorized words: None

Note: In the output text, punctuation is eliminated; all figures (1, 20, etc) are replaced by the word *number*; contractions are replaced by constituent words (*won't => will not*); type-token ration is calculated using said constituents; and in the 1k sub-analysis content + function words may sum to less than total (depending on user treatment of proper nouns and program decision to class numbers as 1k although not contained in 1k list).

	Families	Types	Tokens	Percent		
First 500:	...	...	(775)	(60.78%)	Words in text (tokens):	1275
K1 Words (1 to 1000):	203	279	**898**	**70.43%**	Different words (types):	513
Function:	...	...	(466)	(36.55%)	Type-token ratio:	0.40
Content:	...	...	(432)	(33.88%)	Tokens per type:	2.49
> Fr non-cognate:	...	...	(131)	(10.27%)	Lex density (content words/total)	0.63
K2 Words (1001 to 2000):	34	41	**51**	**4.00%**		
> Fr non-cognate:	...	...	(17)	(1.33%)	*Pertaining to onlist only*	
					Tokens:	1109
					Types:	414
AWL Words (academic):	75	94	**160**	**12.55%**	Families:	312
					Tokens per family:	3.55
> Fr non-cognate:	...	...	(16)	(1.25%)	Types per family:	1.33
					Fr-cognate Index:	43.19%
Off-List Words:	?	99	**166**	**13.02%**		
	312+?	513	1275	100%		

Page menu: Tokens   Types   Families

Integral text: similarly landlords who receive lease payments of fixed amounts will be hurt by inflation as they receive dollars of declining value over time

likewise public sector workers whose incomes are dictated by fixed pay schedules may suffer from inflation the fixed steps the upward yearly increases in their pay schedules may not keep up with inflation minimum wage workers and families living on fixed welfare incomes will also be hurt by inflation savers unanticipated inflation hurts savers as prices rise the real value or purchasing power of an accumulation of savings deteriorates paper assets such as savings accounts insurance policies and annuities that were once adequate to meet rainy day contingencies or provide for a comfortable retirement decline in real value during inflation the simplest case is the person who hoards money as a cash balance a number cash balance would have lost one half its real value between number and number of course most forms of savings earn interest but the value of savings will still decline if the rate of inflation exceeds the rate of interest example a household may save number in a certificate of deposit cd in a commercial bank or savings and loan association at number percent annual interest but if inflation is number percent as it was in number the real value or purchasing payers of that number will be cut to about number by the end of the year although the saver will receive number equal to number plus number of interest deflating that number for number percent inflation means that its real value is only about number number number number creditors unanticipated inflation harms creditors lenders suppose chase bank lends bob number to be repaid in number years if in that time the price level doubles the number that bob repays will have only half the purchasing power of the number he borrowed true if we ignore interest charges the same number of dollars will be repaid as was borrowed but because of inflation each of those dollars will buy only half as much as it did when the lo an was negotiated as prices go up the value of the dollar goes down so the borrower pays back less valuable dollars than those received from the lender the owners of chase bank suffer a number of re al income who is unaffected or helped by inflation some people are unaffected by inflation and others are actually helped by it for the second group inflation redistributes real income toward them and away from others flexible income receivers people who have flexible incomes may escape inflation harm or even benefit from it for example individuals who derive their incomes solely from social security are largely unaffected by inflation because social security payments are indexed to the cpi benefits automatically increase when the cpi increases preventing erosion of benefits from inflation some union workers also get automatic cost of living adjustments colas in their pay when the cpi rises although such increases rarely equal the full percentage rise in inflation some flexible income receivers and all borrowers are helped by unanticipated inflation the strong product demand and labor shortages implied by rapid demand pull inflation may cause some nominal incomes to spurt ahead of the price level thereby enhancing real incomes for some the number percent increase in nominal income that occurs when inflation is number percent may become a number percent increase when inflation is number percent as an example property owners faced with an inflation induced real estate boom may be able to boost flexible ren ts more rapidly than the rate of inflation also some business owners may benefit from inflation if product prices rise faster than resource prices business revenues will increase more rapidly than costs in those cases the growth rate of profit incomes will outpace the rate of inflation debtors

unanticipated inflation benefits debtors borrowers in our earlier example chase bank number of re al income from inflation is bob gain of real income debtor bob borrows deal dollars b m because of inflation pays back the principal and interest with cheap dollars whose purchasing power has be en eroded by inflation real income is redistributed away from the owners of chase bank toward borrowers such as bob as a historical example the inflation of the number and number created a windfall of capital gains for people who purchased homes in earlier periods with low fixed interest rate mortgages inflation greatly reduced the real burden of their mortgage indebtedness they also benefited because the nominal value of housing in that period increased much more rapidly than the overall price level the federal government which had amassed number number trillion of public debt through number has also benefited from inflation historically the federal government regularly paid off its loans by taking out new ones inflation permitted the treasury to pay off its loans with dollars of relate to antiques versus reproductions and to the volatile price of gold three bonus web chapters including a second supply and demand chapter three chapters are available for free use at our website www mcconnenumber com the first of these applications and extensions of supply and demand analysis numberweb is entirely new and provides real world examples of changes in supply and demand shortages and surpluses arising from preset prices and over consumption of non priced goods or resources for instructors who want to extend the supply and demand analysis of chapter number this chapter also explains consumer surplus producer surplus and efficiency losses the other two web chapters the economics of developing countries numberweb and transition economies russia and china numberweb are also available for instructors and students who have a special interest in those topics the three web chapters have the same design color and features as regular book chapters are readable in adobe acrobat format and can be printed if desired all are supported by the study guide test banks and other supplements to the book new web button content we continue to link the book through web buttons to pedagogical features found at our website two types of icons appear throughout the book indicating that additional content on a subject can be found online button types include g this symbol directs students to interaerive graphs developed under the supervision of norris peterson of pacific lutheran university this interactive feature depicts major graphs and instructs students to shift the curves observe the outcomes and derive relevant generalizations ten new interactive graphs have been added to the twenty in the previous edition this symbol directs students to origins of the idea these brief histories were written by randy grant of linfield college and with the new entries examine the origins of number major ideas identified in the book students will find it interesting to learn about the economists who first developed such ideas as opportunity costs equilibrium price the multiplier comparative advantage and elasticity new last words and global perspectives new last unumberard topics are september number and the war on terrorism chapter number efficiency gains from generic drugs chapter numberweb the long run fiscal imbalance in the social security system chapter number pricing based on differences in group demand elasticity chapter number the controversy over ceo pay chapter number and the wto protests chapter number in addition a few last words have

be en relocated to match reorganized content new global perspective pieces include a list of the world number largest corporations chapternumber the top number globalized nations chapter number the full employment budget deficits or surpluses in selected nations chapter number and u s goods and services trade deficits with selected nations chapter number

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Token List [↑]

0-1000 [families 203 : types 279 : tokens 898] a a a a a a a a a a a a a a a able about about about accounts actually added addition additional advantage all all also also also also also also also also although although amounts an an an an and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and appear applications are are are are are are are are are are arising as as as as as as as as as as as as as as as association at at at away away b back back bank bank bank bank bank banks based be be be be be be be be be be be because because because because become been between book book book book book business business but but but buy by by by by by by by by by by by by by by can can capital case cases cause changes charges college color content content content continue cost costs costs countries course cut day deal demand demand demand demand demand demand demand desired developed developed developing did differences directs directs dollar dollars dollars dollars dollars dollars dollars dollars down each earlier earlier efficiency efficiency employment end entries equal equal escape even example example example example example examples explains extend extensions faced families faster few find first first fixed fixed fixed fixed fixed for for for for for for for for for forms found found free from from from from from from from from from from from from full full g gain gains gains generalizations get go goes gold greatly group group growth had half half half has has have have have have have have have he helped helped helped historical histories homes housing idea ideas ideas if if if if if if in in in in in in in in in in in in in in in in in in in in in in in in in include include including increase increase increase increase increased increases increases increases interest interest interest interest interest interest interest interest interesting is is is is is is is is is it it it it it it its its its its keep landlords largely largest last last last learn less level level level living living long losses lost low m may may may may may may may may means meet money more more more more most much much nations nations nations new new new new new new new new not number observe of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of off off on on on on once one ones only only only opportunity or or or or or or or or other other others others our our our out over over over owners owners owners owners paid paper pay pay pay pay pay payments payments pays pays people people people permitted person pieces power power power preventing price price price price price priced prices prices prices prices prices pricing producer product product profit property provide provides

105

public public pull rate rate rate rate rate rate re re real real real real real real real real real real real real receive receive receive received reduced relate repaid repaid rise rise rise rises run s same same save savings savings savings savings savings second second september services simplest so social social social some some some some some some special steps still strong students students students students students study subject such such such such suffer suffer supply supply supply supply supported suppose system taking ten test than than than than than that that that that that that that that that the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the their their their their them these these they they this this this this those those those those three three three through through throughout time time to to to to to to to to to to to to to to to to to to to to to to top toward toward trade true twenty two two types types u under union university up up use valuable value value value value value value value value value wage want war was was was we we were were when when when when when which who who who who who who who who who whose whose will will will will will will will will will will will with with with with with with with words words workers workers workers world world would written year yearly years

First 500 function (466): a a a a a a a a a a a a a a a a about about about although although an an an an and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and and are are are are are are are are are are are as as as as as as as as as as as as as as at at at be be be be be be be be be be because because because because been between but but but by by by by by by by by by by by by by can can did down each for for for for for for for for for from from from from from from from from from from from had has has have have have have have have have he if if if if if if in in in in in in in in in in in in in in in in in in in in in in in is is is is is is is is is it it it it it its its its its may may may may may may may may much much not of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of of off off on on on on or or or or or or or or our our our out over over over so some some some some some some than than than than than that that that that that that that that that the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the the their their their their them these these they they this this this this those those those those to to to to to to to to to to to to to to to to to to to to to toward toward under up up was was was we we were were when when when when when which who who who who who who who who who whose whose will will will will will will will will will will will with with with with with with with would

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First 500 content (775): able actually added addition additional all all also also also also also also appear back back bank bank bank bank bank banks become book book book book book business business buy case cases changes continue cost costs costs countries course day developed developed developing differences earlier earlier end even example example example example example examples faced families few find forms found found full full generalizations get go goes greatly group group half

half half helped helped helped homes housing idea ideas ideas include include including increase increase increase increase increased increases increases increases interest interest interest interest interest interest interest interest interesting keep largely largest last last last learn less level level level living living long losses lost low means meet money more more more most nations nations nations new new new new new new new new new number once one ones only only only other other others others owners owners owners owners paid paper pay pay pay pay pay payments payments pays pays people people people person power power power price price price price price priced prices prices prices prices prices pricing producer product product provide provides public public rate rate rate rate rate rate real real real real real real real real real real real real receive receive receive received repaid repaid run same same services social social social special still students students students students students study subject such such such such supported system taking time time use valuable value value value value value value value value value value want war words words workers workers workers world world written year yearly years

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Second 500 content (123): accounts advantage amounts applications arising association away away b based capital cause charges college color content content content cut deal demand demand demand demand demand demand demand desired directs directs dollar dollars dollars dollars dollars dollars dollars dollars efficiency efficiency employment entries equal equal escape explains extend extensions faster first first fixed fixed fixed fixed fixed free g gain gains gains gold growth historical histories landlords m observe opportunity permitted pieces preventing profit property pull re re reduced relate rise rise rise rises s save savings savings savings savings savings second second september simplest steps strong suffer suffer supply supply supply supply suppose ten test three three three through through throughout top trade true twenty two two types types u union university wage

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1001-2000 [34:41:51] ahead balance balance borrowed borrowed borrows button button buttons cheap comfortable commercial comparative curves debt doubles during earn elasticity elasticity entirely examine government government guide harm harms hurt hurt hurts insurance lends list loan loans loans match origins origins printed rapid rapidly rapidly rapidly rarely regular regularly reproductions retirement treasury upward

AWL [75:94:160] accumulation adequate adjustments analysis analysis annual automatic automatically available available benefit benefit benefited benefited benefits benefits benefits brief chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapters chapters chapters chapters chapters consumer consumption controversy corporations created creditors creditors decline decline declining derive derive design economics economies economists edition enhancing eroded erosion estate exceeds feature features features federal

federal flexible flexible flexible flexible format global global grant identified ignore implied income income income income income income income income incomes incomes incomes incomes incomes incomes incomes indexed indicating individuals induced instructors instructors instructs interactive interactive labor likewise link major major minimum occurs outcomes overall percent percent percent percent percent percent percent percentage period periods perspective perspectives plus policies previous principal purchased purchasing purchasing purchasing purchasing redistributed redistributes relevant relocated resource resources revenues schedules schedules sector security security security selected selected shift similarly solely supplements symbol symbol thereby topics topics transition unaffected unaffected unaffected unanticipated unanticipated unanticipated unanticipated welfare

Sublist 1
analysis analysis available available benefit benefit benefited benefited benefits benefits benefits created derive derive economics economies economists identified income income income income income income income income incomes incomes incomes incomes incomes incomes incomes indicating individuals labor major major occurs percent percent percent percent percent percent percent percentage period periods policies redistributed redistributes sector similarly

Sublist 2
chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapter chapters chapters chapters chapters chapters consumer consumption creditors creditors design feature features features previous purchased purchasing purchasing purchasing purchasing relevant resource resources security security security selected selected unaffected unaffected unaffected

Sublist 3
corporations implied interactive interactive link outcomes relocated shift

Sublist 4
adequate annual grant overall principal

Sublist 5
adjustments decline decline declining perspective perspectives revenues symbol symbol transition welfare

Sublist 6
brief edition enhancing estate exceeds federal federal flexible flexible flexible flexible ignore indexed instructors instructors instructs minimum

Sublist 7
global global solely topics topics

Sublist 8
accumulation automatic automatically induced plus schedules schedules thereby

Sublist 9
controversy eroded erosion format supplements unanticipated unanticipated
unanticipated unanticipated

Sublist 10
likewise
OFF LIST [?:99:166] acrobat adobe al al amassed annuities antiques assets bob bob
bob bob bob bonus boom boost borrower borrowers borrowers borrowers budget
burden cash cash cd ceo certificate chapternumber chase chase chase chase china
colas com contingencies cpi cpi cpi debtor debtors debtors deficits deficits deflating
depicts deposit deteriorates dictated drugs en en equilibrium fiscal generic globalized
goods goods graphs graphs graphs historically hoards household icons imbalance
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repays russia saver savers savers shortages shortages spurt supervision surplus
surplus surpluses surpluses terrorism trillion ts unumberard versus volatile web web
web web web website website windfall wto www

Type List
type_[number of tokens] [↑]

1k types: [families 203 : types 279 : tokens 898] a_[15] able_[1] about_[3]
accounts_[1] actually_[1] added_[1] addition_[1] additional_[1] advantage_[1]
all_[2] also_[7] although_[2] amounts_[1] an_[4] and_[35] appear_[1]
applications_[1] are_[11] arising_[1] as_[14] association_[1] at_[3] away_[2] b_[1]
back_[2] bank_[5] banks_[1] based_[1] be_[10] because_[4] become_[1] been_[1]
between_[1] book_[5] business_[2] but_[3] buy_[1] by_[14] can_[2] capital_[1]
case_[1] cases_[1] cause_[1] changes_[1] charges_[1] college_[1] color_[1]
content_[3] continue_[1] cost_[1] costs_[2] countries_[1] course_[1] cut_[1] day_[1]
deal_[1] demand_[7] desired_[1] developed_[2] developing_[1] did_[1]
differences_[1] directs_[2] dollar_[1] dollars_[7] down_[1] each_[1] earlier_[2]
efficiency_[2] employment_[1] end_[1] entries_[1] equal_[2] escape_[1] even_[1]
example_[5] examples_[1] explains_[1] extend_[1] extensions_[1] faced_[1]
families_[1] faster_[1] few_[1] find_[1] first_[2] fixed_[5] for_[9] forms_[1]
found_[2] free_[1] from_[12] full_[2] g_[1] gain_[1] gains_[2] generalizations_[1]
get_[1] go_[1] goes_[1] gold_[1] greatly_[1] group_[2] growth_[1] had_[1] half_[3]
has_[2] have_[7] he_[1] helped_[3] historical_[1] histories_[1] homes_[1]
housing_[1] idea_[1] ideas_[2] if_[6] in_[23] include_[2] including_[1] increase_[4]
increased_[1] increases_[3] interest_[8] interesting_[1] is_[9] it_[5] its_[4] keep_[1]
landlords_[1] largely_[1] largest_[1] last_[3] learn_[1] less_[1] level_[3] living_[2]
long_[1] losses_[1] lost_[1] low_[1] m_[1] may_[8] means_[1] meet_[1] money_[1]

more_[3] most_[1] much_[2] nations_[3] new_[8] not_[1] number_[47] observe_[1] of_[50] off_[2] on_[4] once_[1] one_[1] ones_[1] only_[3] opportunity_[1] or_[8] other_[2] others_[2] our_[3] out_[1] over_[3] owners_[4] paid_[1] paper_[1] pay_[5] payments_[2] pays_[2] people_[3] permitted_[1] person_[1] pieces_[1] power_[3] preventing_[1] price_[5] priced_[1] prices_[5] pricing_[1] producer_[1] product_[2] profit_[1] property_[1] provide_[1] provides_[1] public_[2] pull_[1] rate_[6] re_[2] real_[12] receive_[3] received_[1] reduced_[1] relate_[1] repaid_[2] rise_[3] rises_[1] run_[1] s_[1] same_[2] save_[1] savings_[5] second_[2] september_[1] services_[1] simplest_[1] so_[1] social_[3] some_[6] special_[1] steps_[1] still_[1] strong_[1] students_[5] study_[1] subject_[1] such_[4] suffer_[2] supply_[4] supported_[1] suppose_[1] system_[1] taking_[1] ten_[1] test_[1] than_[5] that_[9] the_[74] their_[4] them_[1] these_[2] they_[2] this_[4] those_[4] three_[3] through_[2] throughout_[1] time_[2] to_[20] top_[1] toward_[2] trade_[1] true_[1] twenty_[1] two_[2] types_[2] u_[1] under_[1] union_[1] university_[1] up_[2] use_[1] valuable_[1] value_[9] wage_[1] want_[1] war_[1] was_[3] we_[2] were_[2] when_[5] which_[1] who_[9] whose_[2] will_[11] with_[7] words_[2] workers_[3] world_[2] would_[1] written_[1] year_[1] yearly_[1] years_[1]

2k types: [34:41:51] ahead_[1] balance_[2] borrowed_[2] borrows_[1] button_[2] buttons_[1] cheap_[1] comfortable_[1] commercial_[1] comparative_[1] curves_[1] debt_[1] doubles_[1] during_[1] earn_[1] elasticity_[2] entirely_[1] examine_[1] government_[2] guide_[1] harm_[1] harms_[1] hurt_[2] hurts_[1] insurance_[1] lends_[1] list_[1] loan_[1] loans_[2] match_[1] origins_[2] printed_[1] rapid_[1] rapidly_[3] rarely_[1] regular_[1] regularly_[1] reproductions_[1] retirement_[1] treasury_[1] upward_[1]

AWL types: [75:94:160] accumulation_[1] adequate_[1] adjustments_[1] analysis_[2] annual_[1] automatic_[1] automatically_[1] available_[2] benefit_[2] benefited_[2] benefits_[3] brief_[1] chapter_[12] chapters_[5] consumer_[1] consumption_[1] controversy_[1] corporations_[1] created_[1] creditors_[2] decline_[2] declining_[1] derive_[2] design_[1] economics_[1] economies_[1] economists_[1] edition_[1] enhancing_[1] eroded_[1] erosion_[1] estate_[1] exceeds_[1] feature_[1] features_[2] federal_[2] flexible_[4] format_[1] global_[2] grant_[1] identified_[1] ignore_[1] implied_[1] income_[8] incomes_[7] indexed_[1] indicating_[1] individuals_[1] induced_[1] instructors_[2] instructs_[1] interactive_[2] labor_[1] likewise_[1] link_[1] major_[2] minimum_[1] occurs_[1] outcomes_[1] overall_[1] percent_[7] percentage_[1] period_[1] periods_[1] perspective_[1] perspectives_[1] plus_[1] policies_[1] previous_[1] principal_[1] purchased_[1] purchasing_[4] redistributed_[1] redistributes_[1] relevant_[1] relocated_[1] resource_[1] resources_[1] revenues_[1] schedules_[2] sector_[1] security_[3] selected_[2] shift_[1] similarly_[1] solely_[1] supplements_[1] symbol_[2] thereby_[1] topics_[2] transition_[1] unaffected_[3] unanticipated_[4] welfare_[1]

OFF types: [?:99:166] acrobat_[1] adobe_[1] al_[2] amassed_[1] annuities_[1] antiques_[1] assets_[1] bob_[5] bonus_[1] boom_[1] boost_[1] borrower_[1] borrowers_[3] budget_[1] burden_[1] cash_[2] cd_[1] ceo_[1] certificate_[1] chapternumber_[1] chase_[4] china_[1] colas_[1] com_[1] contingencies_[1] cpi_[3]

debtor_[1] debtors_[2] deficits_[2] deflating_[1] depicts_[1] deposit_[1] deteriorates_[1] dictated_[1] drugs_[1] en_[2] equilibrium_[1] fiscal_[1] generic_[1] globalized_[1] goods_[2] graphs_[3] historically_[1] hoards_[1] household_[1] icons_[1] imbalance_[1] indebtedness_[1] inflation_[34] interaerive_[1] lease_[1] lender_[1] lenders_[1] linfield_[1] lo_[1] lutheran_[1] mcconnenumber_[1] mortgage_[1] mortgages_[1] multiplier_[1] negotiated_[1] nominal_[3] non_[1] norris_[1] numberweb_[4] online_[1] outpace_[1] pacific_[1] payers_[1] pedagogical_[1] peterson_[1] preset_[1] protests_[1] rainy_[1] randy_[1] readable_[1] receivers_[2] ren_[1] reorganized_[1] repays_[1] russia_[1] saver_[1] savers_[2] shortages_[2] spurt_[1] supervision_[1] surplus_[2] surpluses_[2] terrorism_[1] trillion_[1] ts_[1] unumberard_[1] versus_[1] volatile_[1] web_[5] website_[2] windfall_[1] wto_[1] www_[1]

Family List
family_[number of tokens] [↑]

1k families: [families 203 : types 279 : tokens 898] a_[19] able_[1] about_[3] account_[1] actual_[1] add_[3] advantage_[1] all_[2] also_[7] although_[2] amount_[1] and_[35] appear_[1] apply_[1] arise_[1] as_[14] associate_[1] at_[3] away_[2] b_[1] back_[2] bank_[6] base_[1] be_[39] because_[4] become_[1] between_[1] book_[5] business_[2] but_[3] buy_[1] by_[14] can_[2] capital_[1] case_[2] cause_[1] change_[1] charge_[1] college_[1] colour_[1] content_[3] continue_[1] cost_[3] country_[1] course_[1] cut_[1] day_[1] deal_[1] demand_[7] desire_[1] develop_[3] difference_[1] direct_[2] do_[1] dollar_[8] down_[1] each_[1] early_[2] efficient_[2] employ_[1] end_[1] enter_[1] equal_[2] escape_[1] even_[1] example_[6] explain_[1] extend_[2] face_[1] family_[1] fast_[1] few_[1] find_[3] first_[2] fix_[5] for_[9] form_[1] free_[1] from_[12] full_[2] g_[1] gain_[3] general_[1] get_[1] go_[2] gold_[1] great_[1] group_[2] grow_[1] half_[3] have_[10] he_[1] help_[3] history_[2] home_[1] house_[1] idea_[3] if_[6] in_[23] include_[3] increase_[8] interest_[9] it_[9] keep_[1] land_[1] large_[2] last_[3] learn_[1] less_[1] level_[3] live_[2] long_[1] lose_[1] loss_[1] low_[1] m_[1] may_[8] mean_[1] meet_[1] money_[1] more_[3] most_[1] much_[2] nation_[3] new_[8] not_[1] number_[47] observe_[1] of_[50] off_[2] on_[4] once_[1] one_[2] only_[3] opportunity_[1] or_[8] other_[4] out_[1] over_[3] own_[4] paper_[1] pay_[12] people_[3] permit_[1] person_[1] piece_[1] power_[3] prevent_[1] price_[12] produce_[1] product_[2] profit_[1] property_[1] provide_[2] public_[2] pull_[1] rate_[6] real_[12] receive_[4] reduce_[1] relation_[1] rise_[4] run_[1] same_[2] save_[6] second_[2] september_[1] service_[1] simple_[1] so_[1] social_[3] some_[6] special_[1] step_[1] still_[1] strong_[1] student_[5] study_[1] subject_[1] such_[4] suffer_[2] supply_[4] support_[1] suppose_[1] system_[1] take_[1] ten_[1] test_[1] than_[5] the_[74] they_[7] this_[19] three_[3] through_[3] time_[2] to_[20] top_[1] toward_[2] trade_[1] true_[1] twenty_[1] two_[2] type_[2] u_[1] under_[1] union_[1] university_[1] up_[2] use_[1] value_[10] wage_[1] want_[1] war_[1] we_[5] when_[5] which_[1] who_[11] will_[11] with_[7] word_[2] work_[3] world_[2] would_[1] write_[1] year_[3]
1k Fr non-cognate families (content only): [families 68 : tokens 131] all_[2] also_[7] arise_[1] away_[2] back_[2] become_[1] book_[5] business_[2] buy_[1] country_[1]

cut_[1] day_[1] deal_[1] early_[2] end_[1] escape_[1] even_[1] fast_[1] few_[1] find_[3] first_[2] free_[1] full_[2] get_[1] go_[2] gold_[1] grow_[1] help_[3] home_[1] house_[1] increase_[8] keep_[1] land_[1] last_[3] learn_[1] less_[1] level_[3] live_[2] lose_[1] low_[1] money_[1] more_[3] most_[1] once_[1] one_[2] only_[3] own_[4] piece_[1] pull_[1] rate_[6] rise_[4] run_[1] same_[2] step_[1] still_[1] strong_[1] such_[4] take_[1] through_[3] top_[1] trade_[1] wage_[1] want_[1] war_[1] word_[2] work_[3] world_[2] write_[1] year_[3]

2k families: [34:41:51] ahead_[1] balance_[2] borrow_[3] button_[3] cheap_[1] comfort_[1] commerce_[1] compare_[1] curve_[1] debt_[1] double_[1] during_[1] earn_[1] elastic_[2] entire_[1] examining_[1] govern_[2] guide_[1] harm_[2] hurt_[3] insure_[1] lend_[1] list_[1] loan_[3] match_[1] origin_[2] print_[1] rapid_[4] rare_[1] regular_[2] reproduce_[1] retire_[1] treasure_[1] upwards_[1] 2k Fr non-cognate families: [families 10 : tokens 17] ahead_[1] borrow_[3] cheap_[1] earn_[1] harm_[2] hurt_[3] lend_[1] loan_[3] match_[1] print_[1]

AWL families: [75:94:160] accumulate_[1] adequate_[1] adjust_[1] affect_[3] analyse_[2] annual_[1] anticipate_[4] automate_[2] available_[2] benefit_[7] brief_[1] chapter_[17] consume_[2] controversy_[1] corporate_[1] create_[1] credit_[2] decline_[3] derive_[2] design_[1] distribute_[2] economy_[3] edit_[1] enhance_[1] erode_[2] estate_[1] exceed_[1] feature_[3] federal_[2] flexible_[4] format_[1] globe_[2] grant_[1] identify_[1] ignorant_[1] imply_[1] income_[15] index_[1] indicate_[1] individual_[1] induce_[1] instruct_[3] interact_[2] labour_[1] likewise_[1] link_[1] locate_[1] major_[2] minimum_[1] occur_[1] outcome_[1] overall_[1] percent_[8] period_[2] perspective_[2] plus_[1] policy_[1] previous_[1] principal_[1] purchase_[5] relevant_[1] resource_[2] revenue_[1] schedule_[2] sector_[1] secure_[3] select_[2] shift_[1] similar_[1] sole_[1] supplement_[1] symbol_[2] thereby_[1] topic_[2] transit_[1] welfare_[1] AWL Fr non-cognate families: [families 10 : tokens 16] enhance_[1] feature_[3] grant_[1] likewise_[1] outcome_[1] overall_[1] purchase_[5] shift_[1] thereby_[1] welfare_[1]

Processing time: 3.41 CPU seconds.

APPENDIX I

Comparison of approaches to needs analysis by Brindley (1989)

	"Language proficiency" orientation	**"Psychological/humanistic" orientation**	**"Specific purposes" orientation**
View of the learner	Lerner as a language learner	Learner as a sentient human being in society with the capacity to become self-directing	Learner as a language user
View of needs	Objective needs stressed. Needs seen as gap between present and desired general language proficiency	Subjective needs stressed. Needs seen as gap between current state of awareness and state of awareness necessary for learner to become self-directing	Objective needs stressed. Needs seen as gap between present language performance in a specific area and language performance required in a particular communication situation
Emphasizes	Where the learner is in terms of language proficiency in one or more skills	Sensitivity to adults' subjective needs	Relevance of language content to learners' personal goals and social roles
Educational rationale	Language learners learn more effectively in a group containing learners of a similar proficiency level	Adults learn more effectively if they are involved in the learning process through consultation and negotiation.	Language users learn more effectively if program content is relevant to their specific area of need or interest.
Type of information	Biographical information	Biographical information	Biographical information
Method of information collection	Standardized forms, proficiency tests	Standardized forms, observation, interviews	Standardized forms, intensive language analysis in target communication situation
Time of information collection	Mainly pre-course	Pre-course	Mainly pre-course
How analysis of information is	Decisions made concerning learners' current ability to use	Decisions provisionally made about types of learning environment, methods, and	Decisions made on appropriate language content to meet

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used	English	content which might be appropriate for learners' subjective needs taking into account their attitudes, motivation and awareness	communication needs of learners
Purposes for collecting information	So that learners can be placed in groups of homogenous language proficiency	So that adults' individual characteristics as learners can be given due consideration in providing learning opportunities	So that learners will be presented with language data relevant to their own personal goals and social roles