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Design and Materials for an
Electronic Textbook for First-Year Russian

by

Lisa Ann Frumkes

A dissertation submitted in partial fulfillment
of the requirements for the degree of

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Approved by

Herbert S. Coats
Chairperson of Supervisory Committee

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Slavic Languages and Literatures

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University of Washington
Design and Materials for an
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by

Lisa Ann Frumkes

Chairperson of the Supervisory Committee: Professor Herbert S. Coats
Department of Slavic
Languages and Literature

Technology today is advancing at an astounding rate. Better hardware and software packages are being developed daily. It is not acceptable to simply use technology in teaching merely because it exists; technology must be integrated into education in a principled manner. This dissertation proposes a blueprint for an electronic textbook for teaching first-year Russian at the post-secondary level. The concepts explored are relevant to the teaching of other languages and topics as well.

Chapter One presents the principles and theories of pedagogy and the specific requirements of language pedagogy. The importance of presenting information in a manner in which students can absorb it is discussed here, as well as the effects of individual learning styles. In Chapter Two, the qualities of existing textbooks are explored and contrasted with those of the electronic textbook; the electronic textbook is intended to provide more individualization and interactivity. Chapter Three deals specifically with the role of the computer in education and the changes that the widespread use of the computer will have on instructors and students. Chapter Four outlines the Russian materials which the electronic textbook will present and includes discussions of existing Russian textbooks. Chapter Five contains the conclusion and an overview of the computer demonstrations which have been included as pocket materials in the dissertation. These presentations provide a more concrete picture of the way the ideas developed in the dissertation will take shape.

The creation and use of an electronic textbook represents the logical next step for language education. It will incorporate technological advances, supply instructors and students with a wide range of materials which can be modified as needed, and provide a laboratory for future research into language education.

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Introduction

Over the past five years, the Russian language teaching profession has seen the appearance of a large number of new textbooks. These texts represent a marked improvement over their predecessors, since they are, by and large, more communicatively oriented. They make greater use of the audio and video facilities available at virtually every university today. A few come with computer software, as well as workbooks, teacher's editions, activity manuals, and other supplementary materials. In other words, Russian textbooks have made large strides towards the level of quality achieved by textbooks for learning other languages, such as Spanish, French, and English.

However, no language textbook in existence today, either for Russian or any other language, can claim to be a textbook for the future. They all remain principally tied to increasingly outmoded media: books, handouts, audio cassette players, video cassette recorders, televisions, and other materials based on paper and magnetic tape. These media are unarguably appropriate for today's educational environment, because they are widely available and accessible by virtually all of today's students at the college level. However, it is clear that other media are currently in ascendance, including those housed on compact discs and computers. These materials will be as central to the learning of the students of the future as paper materials are today.

At the same time that these new technologies are gaining popularity and practical applicability, the way we communicate with one another is fast changing. No longer do we rely on face-to-face communication, telephones or letters. We have new avenues of interaction open to us: electronic mail, computer-based chat rooms, the World Wide Web, MOOs and MUDs, and video cameras which transmit images over the net. These sources of information are not fixed, as are CD-ROMs and laserdiscs. They are

constantly changing and renewing themselves as people join and leave discussions, introduce new topics and revisit old ones with fresh perspectives. When such resources are used as curricular materials, they provide students with a new challenge with each use. Therefore, students need no longer be tied to old editions of textbooks with outdated information or typographical errors, two-month old newspapers, or outdated television programs. Today, we can provide them with relevant, current programming and news; even short wave radio programming is updated regularly and made available at World Wide Web sites. Students can get in touch with native speakers of the language they are studying while at their home universities, instead of waiting until they have the time and money for a visit abroad.

In other words, the way humans communicate with each other is changing radically. These new communications technologies are in turn finding their way into university classrooms and lecture halls. To ignore their existence and to continue to teach as we have in the past, using outdated media and older ways of communicating, is to ignore important facts about the world in which we and our students live. We do our students a great disservice if we continue to prepare them to communicate, learn, and live in a world which will soon no longer exist.

The computer presents many opportunities to both students and their instructors. It has the power to reshape the roles of teachers and learners. The computer can take over some of the tasks normally performed by instructors. For example, it can perform some administrative tasks, such as the tracking of grades and progress by the students. It can also be used to evaluate performance of certain learning activities. This frees more time students and instructors for communicative activities. It can also change the aim and nature of classroom activities as some of these tasks are moved to the homework arena. The computer can assist in these communicative activities as well, by giving

people access to each other outside of class via the Internet. It also gives them convenient access to a wide range of materials, which they can share with their classmates.

Today's children are being introduced to computers as early as pre-school. At a very young age, they are increasingly more comfortable and conversant with technologies which their elders barely understand. These computer-literate people are the college students of the future. Trained to use computers from the very beginning of their educations, they are not likely to accept a university education which still uses paper and tape based materials for the majority of its instruction; such media will seem hopelessly outdated to these students. When we first start seeing large numbers of such students in the next five to ten years, we must have appropriate materials ready for them to use.

Another growing trend in education is distance learning. An increasing number of students are choosing to learn at home at their own pace and on their own time. The computer is playing an increasingly large role in this type of education, which demands materials which students can use independently. This population of learners has the potential to grow substantially over the coming years. The textbook of the future must be able to service these students, who are likely to demand that their educational materials (as well as their instructors) be available via the Internet.

The proposed textbook of the future is already more than just a dream. Materials similar to those which are envisioned as part of the electronic textbook already being used in many language classes. However, most of these materials continue to represent a peripheral part of coursework. Students must make a special effort to use these materials, which are commonly housed in language laboratories removed from the classroom. The vision of the electronic textbook is to place text, audio, video and

multimedia applications in one place. Students will be able to access these materials from language laboratories, generic computer labs, their homes, or wherever it is convenient for them.

When computers began to first be used as supplements to traditional language education, textbook publishers realized they could sell more copies if they provided software to accompany them. Thus, they rapidly proceeded to assemble computer-based materials which could be distributed with the textbooks they published. This software, unfortunately, was generally not of high quality. Not only was it usually not created by the authors of the textbook, it often failed to meet standards which were being introduced by specialists in computer-based education. Computer-based drills thus began to get a bad reputation. As a result, some educators began to see the computer as just another fad in the realm of learning tools. However, we cannot make the new technologies disappear. We cannot force our students back into traditional classrooms. Instead, we must create materials appropriate to this new generation of learners and the technologies to which they are accustomed. We must learn to use these new technologies constructively, instead of using them merely because they are available.

Before computers become the basis of education across the nation (a trend which seems increasingly difficult to deny), it is important that we, as educators, consider the best use of these tools. This is the main purpose of this dissertation. First, it will examine the discoveries of researchers in the fields of language pedagogy, computer-based instruction, and computer-assisted language learning. Then it will apply this information to the first-year Russian language curriculum in American universities in order to determine the shape of a computer-based textbook of Russian. This electronic textbook will be a laboratory for future language teaching research, a flexible and ever-changing entity. Each chapter will consider a different aspect of this question: the first

chapter is devoted primarily to theoretical considerations, the second to the structure of language textbooks in general, the third explores the opportunities and liabilities presented by the computer, and the fourth deals primarily with the content of the first-year Russian textbook.

The discussion in Chapter 1 will center around general principles in language pedagogy. Section 1.1 will take a look at the skills and knowledge students must learn during their study of a foreign language, and how methodologies of the past have addressed the teaching of these elements. Next, in section 1.2, the distinction between rote learning and meaningful learning will be explored. The use of advance organizers and mnemonic techniques will be presented as methods which promote meaningful learning. In section 1.3, the advantages and disadvantages of direct, explicit instruction will be compared with those of approaches which encourage discovery learning. These factors will affect the presentation of grammar and culture in the electronic textbook. Next, the role of the computer as a delivery system for individualized instruction will be explored in section 1.4. This includes a view of the practicality of individualized instruction in the university language classroom and the difficulties involved with managing and coordinating this sort of learning.

In section 1.5, the principles of communicative language learning will be considered. First, this section questions the role of the audio language lab, with its isolating environment, as part of a communicative language learning curriculum, when what students really need is a variety of opportunities to participate in natural conversational interchanges. Some of these conversations may be based on pre-prepared interchanges provided by the textbook, but students must also be encouraged to engage in realistic conversations with one another. Such practice is part of situated learning, and can be conducted both in the classroom and via the intermediary of the

computer used over the Internet. However, students cannot be expected, especially at the beginning of their learning, to spontaneously initiate and participate in such conversations; that is a skill which must be developed gradually. Other activities, such as listening comprehension, comprise a vital part of this preparation. A variety of other methods can also be used to make language learning more successful. The value of the judicious use of the native language and the overt teaching of grammar will be discussed in this light. While the computer can be used in this way, it can also be used to cue and evaluate unconstrained natural input, although certain precautions must be taken when using the technology in this way.

In order for students to become competent users of a foreign language, they need to achieve some level of mastery of the grammar of that language. However, communicative and grammatical competence need not be widely disparate goals; in fact, there is research that suggests that it is not possible to develop one without the other. Therefore, it is not unreasonable to suggest that a syllabus based partially on grammatical topics can be used as part of a communicative language learning curriculum. But while learning grammar is important, it is also vital that presentations and exercises are contextualized and encourage the natural use of language. Extra-linguistic information, such as that provided by sounds and pictures, can be an important part of this context. Taking into account these various requirements, effective exercises to prepare students for communication in the classroom may be devised.

In section 1.6, the learning styles of individuals and the implications of these styles on the electronic textbook will be discussed. A wide range of sensory styles, which describe the way people use their senses and emotions and affect the way they learn have been identified. Other characteristics, such as field independence, narrow and broad categorizing, analytical and global thinking, flexibility, and cooperation and

competition also influence the way learners deal with new information. While the electronic textbook will address individual learning styles, it will also take a hand in helping students to develop good learning habits. The electronic textbook will inform students of learning goals and advise them on how to achieve these goals, something that is missing from many traditional textbooks. Other ways of helping students learn will be discussed in section 1.7. These aids may include the use of games and humor to motivate students as well as instruction in time management techniques. Finally, in section 1.8, the effect of the computer-based curriculum on the teacher's role will be discussed.

Chapter 2 presents a general discussion of the structure and roles of a textbook. Some of the discussion is particular to language textbooks or to computer-based textbooks, but much of it is applicable to textbooks in general. All textbooks must provide materials which are appropriate for the course and the people participating in it, but the computer can make possible a better fit between the materials and the individuals using them. In addition, the computer can not only prepare students for communicative language learning, but also allow them to engage in communication with one another or with those outside the class. These roles of the textbook and the computer will be explored in section 2.1. Section 2.2 discusses some basic ways to ensure the readability of the textbook and the accessibility of its materials. While applying readability formulas may not be the most reliable way of simplifying writing, other clarifying techniques may be used. Sentence length can have an effect, as can avoidance of the passive voice or the organization of information into lists and charts. The techniques of informational mapping and structured writing also suggest some ways of making presentations clearer. Other factors contribute to clarity as well: authors must take into account the nature of the material, the purpose of presenting the material to the reader

and the prior knowledge of the reader. Finally, well written materials are clearly organized, relevant, and administered in doses small enough for the reader to understand and absorb. Section 2.3 stresses the special importance of clear writing in certain situations. For example, the textbook must be exceptionally clear when presenting new materials, instructions, or when providing assistance.

The next section (2.4) discusses the exercises and other activities which will be found in the electronic textbook. A variety of drill types are made possible by the electronic textbook, including multiple choice, matching, scrambling, fill-in-the-blank and other short answer exercises. The computer is also capable of evaluating sentence-length input, although evaluating such answers is more difficult. Exercises based on simulations can also be performed. These simulations may be entirely text-based, although they may include pictures, and allow students to “explore” a virtual world independently or together with others. Virtual reality may make more elaborate microworlds possible in the future. This section ends with a general discussion of the pros and cons of repeating exercise items and the importance of realism in textbook exercises.

The way exercises are evaluated and materials reviewed is as important as the exercises themselves, and aspects of feedback are discussed in section 2.5. The computer can determine the knowledge level of individual students and provide appropriate materials accordingly. To do this, it will use algorithms which determine the level of success attained by each student on each topic as well as methods of modeling that knowledge. In addition, the computer will provide appropriate and accurate feedback quickly, steering students away from incorrect answers toward correct ones. Keyword recognition algorithms or parsers will be employed to evaluate full-sentence student input. In addition, students will be given a certain amount of control over the

amount of feedback they receive on their work. Finally, student progress will be reported to instructors, who in turn must be able to interpret those scores in a meaningful way.

In Chapter 3, the main strengths and contributions which the computer brings to the realm of language study will be explored. That is, we will explore what the computer can do, as well as what it should do. First of all, it must be understood that the computer is a new medium which cannot be used in the same way as paper- or tape-based media. The computer's unique qualities must be appropriately exploited in order for it to be an effective teaching medium. In section 3.1, we will see that it can provide a number of tools to improve the variety, organization and presentation of educational materials. These tools include databases, multimedia and hypertext presentations, and individualized instruction. But while using the computer brings benefits, but it may also have liabilities, especially if the physical limitations of its potential users are not considered. In section 3.2, the effects of computer use on the human body will be explored and some ways of counteracting these effects considered. After that, the discussion will turn to the overall organization and navigation of the electronic textbook in section 3.3. Students must be able to find their way around the materials easily in order to use them successfully. This can be accomplished, in part, by making the textbook's interface familiar to its users. It is important to consider not only how users navigate between the different sections of the textbook, but also how they find their way between screens. Instructional maps, search algorithms, clear labels and titles, and other navigational assistance help to ensure the usability of the materials. Successful navigation on a smaller scale (between screens of a presentation, for example) requires good organization of the information on the screen. Some of the strengths of the computer can become liabilities if they are not used judiciously. For example, visual

aids can greatly facilitate the use of the textbook, but may be confusing if care is not taken in implementing them. The reasons for using realistic pictures and the role that culture plays in perception, for example, must be carefully considered. It must also be kept in mind that visual information may be more useful to some students than others, depending on their learning styles. Care must therefore be taken that color as well as textual and spatial cues are used clearly and consistently throughout the textbook. The last section of this chapter (3.4) considers the effects which the electronic textbook and other new educational approaches might have on education.

In Chapter 4, the actual contents of the Russian electronic textbook will be considered. This includes a discussion of the grammar topics which the textbook will address. Simple, memorable classification systems for the inflection types of various word classes will be proposed in section 4.1. Then, the importance of the proper sequencing of materials will be considered in section 4.2. Special consideration will be given to the tasks of learning the alphabet and handwriting. Next, a proposal for the ordering of lexical, grammatical, and communicative topics within the textbook will be presented. In subsequent sections, the major topics involved in language learning--vocabulary, grammar, culture, listening, speaking, reading and writing--will be considered in turn. The discussion of vocabulary in section 4.3 will include a discussion of the amount of vocabulary to be presented. Other important issues here include reasons for proposing a basic, core vocabulary for all students, the use of frequency lists to create this master list, ways to include other lexical items students may need, and methods of presenting members of a semantic group. Vocabulary learning is not the same for each student or each word. Some words seem to be difficult to learn, and some words are easily confused with other, similar words. But some students just seem to learn vocabulary more easily than others. Some of these differences may be

accounted for by learning styles, and this variation across the student population must be addressed. Tactics to aid students to associate words with known items will also be discussed. In addition, the electronic textbook must train all students in the skill of educated guessing, so that when they are confronted by unknown words, they have resources other than the dictionary available to them. Finally, a selection of vocabulary exercises and games will be proposed.

In section 4.4, the topic of grammar will be taken up. This includes a discussion of grammar teaching methods. The costs and benefits of inductive and deductive approaches will be considered, as well as the advisability of presenting grammatical terminology as part of the study of language. In order to make grammar teaching as contextualized and communicative as possible, it is vital to present it in a way which allows students to assimilate it easily and gradually. One way of doing this is by relating new topics to previously introduced ones. Students can thus be eased into the active use of these new structures. Eight steps towards this end are presented. Students must first learn to recognize the forms of the target construction, both on the basis of their morphology and within meaningful contexts. Then they can be asked to produce those forms, first in mechanical drills, and then in meaningful contexts. As students become more comfortable with the new concept and its forms, it can be exercised alongside familiar, previously learned forms. Then students are ready to use the forms in truly communicative exercises. They may be gradually led into free expression through translation exercises and free-response questions. This section concludes with a discussion of the presentation of grammar in existing texts, and how well these texts lead students to the communicative use of newly learned grammatical topics.

In section 4.5, an often neglected skill is discussed: the teaching of culture. Working knowledge of the target culture is an important factor if communication is to be

successful. The distinction between factual knowledge of culture (“big-C” Culture) and the mastery of behavioral culture (“little-c culture”) is an important one. After all, it is the mastery of behavioral culture which will make students effective communicators in the target language. But the teaching of culture can present some difficulties, especially when students have strong nationalistic feelings or hold stereotypes about the target culture. The task is also complicated by the presence of subcultures within the target society, whose characteristics must also be understood if students are to communicate effectively.

Section 4.6 marks the beginning of the discussion of the four “basic” language skills (listening, speaking, reading and writing) with a discussion of the listening skill. One of the learner’s first jobs in mastering listening skills is “tuning” the ear to the distinctive sounds of the target language. Once students can identify individual spoken words, they must be trained in two types of listening tactics: listening for the gist and listening for details. The computer can be very useful in the training of the ear, since it can present audio, video, still pictures and text as part of this training.

The speaking skill is addressed in section 4.7. Pronunciation and intonation are a vital part of this skill, and must be constantly reviewed throughout the course to ensure that students achieve some amount of mastery in this area. It is also important to prepare students for real conversations in the target culture. Examples of real conversations can be provided by prepared dialogues, but students must also be pushed to engage in spontaneous discussions, even at the early stages. Although it would seem able to play only a minor role in the development of the speaking skill, the computer can be used to promote real conversations between students, instructors and even native speakers of the language.

In section 4.8, the reading skill is examined. Students need to be taught strategies which will make them effective readers, even if they are good readers in their native language. In their everyday lives, people have reasons for reading. Similar reasons must be provided to students engaging in the reading task in the foreign language. Providing students with texts of particular interest to them may go a long way in providing such a purpose. And since we are preparing students to read texts in the real world, we must give them some exposure to authentic texts, and teach them not to expect every text they encounter to be graded to their level. The electronic textbook will assist students in the development of strategies which will help them understand more difficult texts. These strategies may be roughly divided into bottom-up and top-down skills. Pre-reading questions and other activities will be used to introduce students to new reading assignments. These tasks can include making predictions about the topic and content of the text using keywords or other textual information. The electronic textbook may also provide clues in the form of cultural information or illustrations as preludes to reading. After students have finished reading, they may be asked to complete exercises or answer comprehension questions.

Finally, in section 4.9, the skill of writing will be addressed. Writing is a complex skill which requires mastery of a number of other skills, and is therefore very difficult to learn. For the beginning student of Russian, the first impediment to writing is posed by the challenges of learning to write and type in Cyrillic. Once students have mastered those skills, they can perform fill-in-the-blank, short answer, and translation exercises which allow them to practice certain aspects of the writing skill. Guided writing allows more freedom in writing longer passages, while still providing content for the beginning writer. The computer can also be used as a tool in the creative writing process, aiding students in the writing of compositions. The chapter concludes with a

discussion of the changes the Internet is bringing to the way people communicate with one another and how this might affect education.

To demonstrate some of the presentations and exercise types discussed in this work, a diskette containing example modules has been included as pocket materials. These modules will serve to illustrate some of the computer-assisted language learning techniques which are discussed throughout the dissertation.

The task of this dissertation is to set forth a vision of the textbook of the future. The task of creating this textbook is appropriate for a team of people with a wide range of talents in various fields working together over several years. The completed electronic textbook will provide as one of its greatest services a laboratory for future research on language learning. Since it will allow tracking of the performance of students, various educational presentations and treatments can be administered via the textbook, providing a large amount of data to researchers. Thus, the electronic textbook will provide not only an improved learning environment for students, but also an experimental environment for researchers who in turn can play a role in the further improvement of the materials.

This dissertation will demonstrate that it is feasible to deliver the materials for a foreign language textbook over the computer. It will argue that computer-based delivery of educational materials represents a necessary step forward in education. That is, used properly, the computer is a language teaching tool superior to paper-based books. But in order for the electronic textbook to deliver on these promises, it must be based on the results of research on language pedagogy, computer-based instruction, and computer-assisted language learning. Failure to take such research into account will result in the creation of a teaching tool which is no better than its predecessors. After all, just using

the computer does not result in better education. Rather, it is the principled use of the computer which will improve teaching.

This dissertation has a wide scope, touching on a wide variety of topics which are vital to a discussion of a foreign language textbook of the future. The hope is that this dissertation will be seen as a blueprint of the textbook of the future and will serve as a point of departure for the actual development of this textbook. The issues discussed in this dissertation must be considered seriously before computer-based materials become an everyday part of language instruction. Otherwise, the future of language education in this country will be put in severe jeopardy. We must be prepared for the future before we reach it. This dissertation represents one step toward that future.

Chapter 1: Principles of Pedagogy

Merely making material available on a computer in the form of an electronic textbook will not automatically improve the quality of the educational materials. The new textbook must be solidly grounded in theories and research of language pedagogy. If it is not, it is merely another textbook, rather than a textbook for the future.

The skills and knowledge which are vital to language learning will be outlined first. Then, theories concerning the way individuals differ in their learning will be explored. Although research on child acquisition of language will be considered at certain points, it is important to keep in mind that the discussion primarily concerns adult learners of a second language. Many of the learning techniques which will be suggested take advantage of the adult predisposition to categorize and organize new information, a very different approach than the one taken by children learning their first language.

1.1 Language

Learning a language means learning both a body of knowledge as well as a set of skills. The body of knowledge includes such concepts as grammar, lexicon, and culture; other knowledge may be necessary in certain situations. The set of skills includes, but is not limited to, listening, speaking, reading and writing.

Any approach to second language learning implicitly emphasizes a subset of all the possible skills and knowledge possessed by the ideal native speaker of the language. For example, the grammar-translation method, which is most commonly associated with the teaching of Latin and Greek and which was in common use through the 19th century, focused mainly on learning the skills of reading and writing. The skills of speaking and listening were not addressed by this method, since it was intended to teach the reading and writing of languages which were no longer spoken by any living community. Students learned grammar and vocabulary to primarily to achieve

proficiency in reading and writing. The mastery of the grammar and vocabulary was seen by some as the desired end of language learning, and many of today's students still hold this view.

On the other hand, the audio-lingual method stressed the importance of speaking. Based on behaviorism, it required students to repeat structures perfectly until they became automatic. This skill was largely based on the memorization of grammatical constructs and lexical items, but without explicit instruction of either. By contrast, communicative approaches put a great deal of emphasis on the receptive skills of listening and reading as preparation for the development of the speaking skill. Generally, grammar is not taught overtly in this method. Instead, students are expected to induce grammatical rules from the input they hear and see. Finally, the proficiency approach, which came into use in the 1980s, as outlined by ACTFL among others, evaluates students on the basis of their competence in each of the four skills. This competency is based not only on correct use of vocabulary, grammar and culture, but also on the ability to communicate.

The most basic building blocks of language knowledge are grammar, vocabulary and culture. One of the tasks of the second language learning program is to deliver this knowledge. Some teaching methods teach these concepts in a direct, overt manner. These presentations are often followed by exercises which help the student to retain the information and use it creatively. Other teaching methods, however, remain based on the idea that learners can extract the grammatical and lexical knowledge from the input they get. The desired result is largely the same in both cases: students will learn enough about the language to be able to begin to use it effectively.

Developing the skills of listening, reading, speaking and writing, on the other hand, requires a different approach. Adults in the second language classroom already

know how to listen, read, speak and write in their native language. They may not believe they need additional training in these skills as they learn a new language. However, competency in these skills in the native language does not necessarily translate to competency in these skills in the second language. Beginning students must learn to apply their new knowledge (discussed in the previous paragraph) to the skills which are the actual target of their language study.

The electronic textbook is based on a premise similar to the one that underlies the proficiency movement. That is, students are expected to demonstrate that they can listen, read, speak and write at some level of accuracy and sophistication. To achieve these level, they must have some knowledge and control of grammatical concepts, lexical items, and cultural norms.

There is certainly more to learning a language than the rudiments of knowledge and skills which were discussed above. For example, for learners to speak and listen effectively, they must have some practical control over the phonetics of the language. That is, learners must “tune” their ears to the unfamiliar sounds of the target language, and they must receive instruction about how to produce the unfamiliar sounds. In addition, students must be familiar with the orthographical rules to be able to read and write competently. Other knowledge, such as information about how to manage language learning and how to develop useful language study habits, may also be useful to the beginning learner.

Translation and interpreting are other areas in which students of a language might wish to develop skill. However, the electronic textbook, which is intended as a beginning course, will not attempt to address these areas, since they are not necessary for most beginning learners of a language.

Skill in listening, reading, speaking and writing requires the skillful manipulation of the knowledge bases of grammar, vocabulary and culture. However, using this knowledge need not be a conscious act. Indeed, people speaking their native language rarely consciously consider the knowledge bases which they possess. Generally, conscious use of this knowledge occurs when the linguistic situation is new or uncommon. For example, speakers are sometimes compelled to “hunt” for words which they use infrequently. Sometimes, unusual situations such as a formal setting or an encounter with a less proficient speaker may cause the need to access unaccustomed grammatical or lexical knowledge. Beginning learners of a second language, however, do a great deal of this type of conscious thinking. For them, every situation is uncommon from a linguistic point of view, since every situation is new.

The electronic textbook, then, will approach language as a set of grammatical, lexical and cultural knowledge bases which students must learn to manipulate in order to listen, speak, read and write. Grammatical constructs, lexical units, and cultural information will not be presented for their own sake. Rather, they will be portrayed as the building blocks which students will use to communicate. The teaching and reinforcement of each of these main skills and knowledge bases will be considered in turn in Chapter 4.

1.2 Rote Learning, Meaningful Learning, and Mnemonics

Ausubel (1968) claims that two types of learning occur in education: rote learning and meaningful learning. The distinction between the two is very important. Rote learning, such as the memorization of dialogues or vocabulary definitions, is not incorporated into that which one already knows. Such information is easily forgotten, since it is not related to anything else which the learner knows. By contrast, meaningful learning can be related to what the student already knows and is worked into the existing

cognitive structure. Information thus processed is more readily retrievable and reapplied to similar situations. Students should therefore benefit from language education which consists of more meaningful learning and less rote learning.

Language education, however, has traditionally relied on a great deal of rote learning, to learn arbitrary information such as vocabulary items and grammatical endings. Some approaches even include the rote memorization of entire dialogues, poems and prose texts. Many students strongly reject the idea of rote learning, which is not a part of the American educational culture, and many are not successful with it. In addition, rote learned material is generally only retained in the short term, and is easily forgotten later. (Robinson et al., 1985). And while rote learned information can be retrieved by the student for even years afterwards, it really only becomes a part of the students' active knowledge when it is meaningfully processed and incorporated into their cognitive structure. It may be that language learning has discouraged otherwise bright students by its strong dependence on rote learning of arbitrary items. Thus, we must find ways to make the learning of these building blocks of language more palatable. Advance organizers and mnemonic techniques, which are discussed in sections 1.2.1 and 1.2.2 below, are quite valuable in this regard.

Meaningful learning, the idea of fitting new information into the framework of information which the student already knows, is an important concept within the theory of constructivism. Constructivist learning theories claim that individuals build their own perceptions of reality based on their personal observations. Constructivist theory stands in contrast to objectivist theory, which states that there is one reality, and that the goal of education is for everyone to seize upon that same reality. In objectivist theory, knowledge is not built upon education or experience *per se*; knowledge stands apart from the methods it took to achieve it (Duffy and Jonassen, 1992).

1.2.1 Advance Organizers

As discussed above, Ausubel suggests that materials should be presented in a manner such that later materials can be related to earlier ones to encourage meaningful learning. That is, materials should not be learned in an isolated, rote manner; they should be integrated into an overall knowledge structure. Ausubel also advocates the use of advance organizers, which are presented prior to the new material and supply a general overview.

The purpose of advance organizers is to clarify a learning task which will be the object of students' subsequent study. Instead of a specific outline, advance organizers provide a broad framework for knowledge by emphasizing information which the student already knows. This prepares learners to incorporate the new knowledge into the framework of the old. Some research has shown that university students benefit more from the use of advance organizers than do other groups; that is, their learning and their retention of that learning seem to increase (Hartley and Davies, 1976).

The textbook must present difficult new concepts, such as as new grammatical items, in a way which does not make them appear arbitrary or random. That is, they must be related to ideas which the student already knows (Sharwood Smith, 1988b). Such anchoring concepts may be ~~constructions which occur in the student's native~~ language, or they may be elements of the target language which learners have already learned. The electronic textbook will incorporate the use of advance organizers for the teaching of new grammatical and cultural concepts, providing students with a means to relate these new concepts to ones which they already know. For example, a section on the possessive use of the genitive case would be preceded by a general discussion of the way possessives work in English, including the use of the grammatical marker "apostrophe-s". This provides students with the opportunity to consider what they

already know about possessives in their native language and prepares them to learn about their construction and use in Russian.

1.2.2 Mnemonic Techniques

Students have traditionally been asked to do a large amount of rote learning when learning foreign languages. In the past, especially, they were asked to memorize dialogs, poems and vocabulary lists. Is there an alternative to this method? How can we help students learn arbitrary information, such as the fact that работа means 'work'? One way is to train students in the use of various mnemonic devices. This will help them to help link the new words to ones which they already know, either in their native language or in the target language. Thus, the student might link the Russian word работа with the English 'robot' (a machine which works) or the word холодильник 'refrigerator' with the Russian холодно 'cold.' Visual links are also important mnemonic aids. For example, the word осень 'autumn' may be linked to the word 'ocean' by the student, and then linked to a visual image of a cool autumn day at the beach.

This approach is known as the mnemonic keyword method, and it incorporates arbitrary information into existing cognitive structure. A great deal of research has been conducted regarding the usefulness of this method (Pressley, Levin & Delaney, 1982; Levin, 1981; Paivio & Desrochers, 1981) and it shows that learners at most levels benefit from the use of various mnemonic techniques and perform better than those who have not been encouraged to use such methods. Research into the use of mnemonic keyword methods across languages suggests that these techniques are also useful for learning new foreign language vocabulary words (Delaney & Raney, 1982, cited in Pressley, Delaney and Raney, 1982). In fact, the keyword method has even been shown to be more successful than the use of meaningful context in learning the

meanings of new vocabulary words (Pressley, Levin, Kuiper, Bryant and Michener, 1981; Dale & Reichart, 1957, both cited in Pressley, Delaney and Raney, 1982).

The mnemonic keyword method combined with visualization techniques has been shown to be an effective way for students to remember vocabulary words (Levin, 1981). Thus, to continue with the ραβότα/'robot'/'work' example, the student could imagine a robot working. Erdelyi et al. (1976) found that pictures generated by learners in their own minds provide a more durable, lasting memory than either pictures provided for them or just the words alone; in fact, students who use such imagery methods may experience better recall each time they access the image. Thus, learners should be encouraged to create vivid mental images on their own when they create mnemonic keyword links.

Mnemonics can also be applied to the memorization of other arbitrary information, such as inflectional endings. The electronic textbook will instruct students in the use of mnemonic devices combined with imagery techniques and encourage and assist students in the creation of their own mnemonics. In addition, the electronic textbook, with its interactive capabilities, will allow learners to share mnemonics they create with their fellow students and instructors. These "home-grown" mnemonics can be later entered into the textbook database for the benefit of future students.

Mnemonic devices are only temporary measures. They may help students to recall unfamiliar constructions or words when they are first presented. However, as students use these concepts in their communicative activities, they will rely on the mnemonic devices less and less. That is, students no longer need these indirect associations once the target items have been integrated into their overall knowledge. This is clearly what we want them to do. Mnemonic techniques merely provide a

temporary anchor for new concepts, something that the rote learning process cannot provide.

1.3 Explicit Instruction vs. Discovery Learning

In the world outside of the school or university, there are rarely textbooks available to teach people the rules behind the things they need to know. Learning in the real world may be accompanied by a reference book, videotape presentation, or a tutorial. More often, however, people are asked instead to look at examples and extract knowledge from them. Outright, explicit instruction, where learners see rules before they are exposed to examples using those rules, may be minimal or non-existent outside the classroom. Given that very little explicit instruction happens in the real world, perhaps it should be avoided entirely in the classroom environment as well, leaving our students to instead discover rules from the examples we give them. After all, this is how children learn their native language, and in some cases, a second or third language. The question is whether such an approach is appropriate and efficient for adult learners of a second language.

Steinberg (1991b) claims that most students need explicit instruction, and that even the most talented students (who may learn well independently) can benefit from explicit instruction. Laurillard (1991) ~~warns against the use of discovery learning of~~ syntax and morphology, for fear that students will deduce the wrong rules from the examples they see. After all, even a slightly misleading example could cause a student to derive an incorrect rule. And even if students do manage to extract correct rules, there is no guarantee that they will be able to apply them in new contexts. In short, discovery learning may present too great a challenge to many students, especially given their limited daily exposure to the language. Therefore, Laurillard, like Steinberg, recommends that the rules of the language be directly stated. In addition, some students

may prefer explicit instruction to discovery learning, perhaps because they have become accustomed to it during the course of their education. Others, however, feel constrained by such an approach and prefer the experience of “discovering” the concepts independently.

An approach which combines both methods would seem to be in order. That is, explicit instruction can be used to guide discovery learning. The broadest interpretation of discovery learning suggests that students be allowed to explore the entire body of the textbook. A narrower interpretation, however, would allow students to access only those concepts appropriate to their level and to explore them as they like. Students could see carefully chosen examples which lead them to the correct rule (Rutherford and Sharwood Smith, 1988). The examples could even be annotated to ensure their correct interpretation.

In the beginning, the electronic textbook will introduce learners to both explicit instruction and discovery learning. The discovery learning approaches will be relatively constrained in scope; allowing students access to only a constrained area of material, not the entire body of instruction. Instead, students will be encouraged to use discovery method techniques to extract rules from examples and references to already learned concepts. Later, as students become more familiar with both learning approaches, they will be allowed to choose between the two. The computer will monitor the students' success using each approach and guide them to select the approach which is most successful for them. This is discussed further in the section on grammar (4.4.1.1).

1.4 Individualized Instruction

The advent of any new teaching tool--whether as small as a textbook or as large as the audio language lab--is typically accompanied by sweeping claims about the way it will revolutionize education. The same can be said of computers. When computers first

came into vogue, they were hailed as tools which would provide truly individualized instruction. The dream was for the computer to track of each student's progress and drive particularly problematic concepts home. In short, educators hoped that computers would give students the much needed personalized tutoring which the instructors themselves could not provide.

However, this dream has yet to be realized. One reason for this may be that computers are still used to deliver supplementary materials, often in isolation from other coursework. That is, they do not address enough of the student's learning experience in a unified manner. But the electronic textbook will be better able to address the global needs of students, because it will have access to most of the students' work. This information will enable it to properly guide individual students to achieve their goals.

While the electronic textbook will provide more individualized instruction, the student's independence will remain somewhat constrained. After all, the electronic textbook is intended to become a part of the regular university course. Thus, all the students need to be approximately at the same place in the materials on a day-to-day basis if they are to interact in a mutually profitable and satisfactory fashion in the classroom. Therefore, students will progress at their own pace to a certain extent, and allowed to hone new skills as they please, but the entire class will be introduced to new concepts at the same time. However, the idea is not for the entire class to slow down to the level of the least talented learner, or to speed up to the levels of the most proficient students, but for the weakest learners to get more practice and therefore better able to perform at a higher level with the rest of the class, thus making in-class time more constructive for everyone (Steinberg, 1991b). What this means for the "quicker" students is that they have more options about the use of their study time. They may choose to do additional work on the lesson topics, review old topics, or use the time for

other activities. For the “slower” students, this individualized approach means that they will be more prepared for in-class interaction than they would have been otherwise.

In a traditional homework exercise, all students are asked to perform the same number of items. However, once a student demonstrates mastery of a concept, completing the remaining items in an exercise may be redundant. The electronic textbook will track each student’s progress. Once an acceptable level of proficiency has been reached, the student will be allowed to choose to continue the current exercise or to proceed to another topic. (Proficiency may be determined in different ways for different tasks: Steinberg suggests that a student may show proficiency by answering a certain number of questions correctly in succession, or by responding correctly to a certain percentage of all the questions presented. See section 2.5.5.1 for more information.)

Students will be allowed to continue to work with a concept until they attain an appropriate level of proficiency. Additional help may be necessary in order to achieve this goal. This help might include an alternative explanation of the concept at hand or a review of closely related, previously studied material. Then, a new set of exercises will be presented. If the student is still not successful in learning the concept, it is necessary to alert the instructor to the difficulty. The instructor can then assess the problem and provide personalized assistance. ~~Thus, the electronic textbook does not entirely remove~~ teachers from instruction. Rather, the instructor’s expertise is called upon when it is critical for the success of the student. This approach allows individuals to pursue topics at the speed their prior knowledge and talents allow. They are not unnecessarily rushed or held back by others. Methods of determining the proficiency levels of individual students is discussed in more detail in section 2.5.4.

1.5 Communicative Language Learning

Communicative language learning, as the name suggests, strives to teach the student how to communicate in the target language. In other words, teaching students to communicate is seen as more important than mastering grammatical rules, discrete vocabulary items, or native-like pronunciation. This does not mean that accuracy is no longer important; it merely means that communication is the main objective of language learning. In this section, the goals of communicative language learning and how one might achieve them with the aid of the electronic textbook will be discussed.

There are striking differences between communicative language learning and the behaviorist (audio-lingual) movement. The behaviorists felt that students should avoid making errors at all costs. This required a great deal of controlled, usually oral practice of the structures of the language. This approach was facilitated by the language lab, which provided students with the opportunity to hear taped sessions of native speakers speaking the target language flawlessly. Students were expected to make their utterances match those of the native speaker as closely as possible. As it turned out, students were often unable to achieve this end on their own. This placed a great deal of pressure on the instructor, who often had to supervise student work in the laboratory. Students were not encouraged to try to express their own ideas; this uncontrolled type of practice might cause them to make errors, which behaviorists deemed fatal to language learning. By contrast, communicative language learning encourages students to speak to each other about their own ideas and experiences. As a result, they make errors, but these errors are seen as a short-term phenomenon, a necessary step on the road to communicative proficiency.

One of the major complaints which teachers have made against textbooks in recent years is their lack of emphasis on communication (Benevento, 1984). While learning theory was emphasizing communication, textbooks which also stressed this

goal were in short supply. Today, a large number of new, communicatively-based textbooks are being published. For Russian, these include *Начало: When in Russia...* (Lubensky, Ervin and Jarvis, 1996); *Голоса: A Basic Course in Russian* (Robin, Robin and Henry, 1994), *Russian: Face to Face* (Morris, Vyatutnev & Vokhmina, 1993). The electronic textbook will follow in this new tradition and incorporate the qualities central to communicative language teaching, such as the use of authentic and natural language, a focus on comprehension as well as production, and, of course, proficiency in communication.

However, some commonly accepted communicative language learning practices will not be implemented in the electronic textbook. For example, the electronic textbook will not insist upon exclusive use of the target language in instruction. Nor will it do away with explicit grammar explanations. The desirability and practicality of these approaches will be examined in section 1.5.4.

1.5.1 The Problems of the Language Laboratory

It is inadvisable to proceed into the future without taking a hard look at the past. Therefore, an overview of the reasons why the behaviorist approach failed to work as expected is in order. More specifically, the reasons for the failure of the language laboratory to revolutionize language education must be addressed.

The language laboratory placed a great deal of responsibility on the backs of individual students. They were expected to work independently in the laboratory, listen to long tapes, produce utterances as cued by the tapes, and perceive and correct their own errors. Part of this correcting process required student to play back their responses and compare them to those of the native speaker on the tape. But many students, trying to move through the drills as quickly as possible, failed to check their work at all, if indeed they were talking back to the tapes as instructed. Even those who faithfully

checked their work often proved unable to detect, much less correct, their own errors, which could be of a number of types: phonetic, intonational, syntactic, semantic or pragmatic. In the end, the instructor's presence was required in the laboratory, in order to ensure that student errors were corrected. This seems ironic, since one of the selling points of the language laboratory was that it would free instructors from such work.

Even when students did manage to reproduce perfectly what they heard in the language lab, there was no guarantee that they actually understood what they were saying. Like parrots, they could make utterances which others could comprehend without understanding them themselves. Students were speaking, but they were not communicating; they were not expressing information which they wanted others to understand. Nor were they listening to native speakers to perceive meaning; they were only listening to them to discover which word they had to plug into pattern drill. By contrast, communicative language learning is an approach that seeks to give students many opportunities to speak communicatively and creatively--even if not perfectly correctly.

1.5.2 Naturalness

One problem with many classroom language-learning activities is that they are lacking in naturalness. That is, the conversations included in textbooks, and the comprehension questions based upon them are not real to the students and may not be perceived as useful. Consider the following example from Clark's *Russian* (1983, both the Russian original and the translation can be found on p. 181-182):

Саша: Привёт, Анто́н. Как живёшь?

Анто́н: И не спрашивай. Я сегодня расстро́ен.

Саша: А что ты там чита́ешь?

Анто́н: Досто́евского.

Саша: А что именно?

Антон: «Преступление и наказание».

Саша: Вот почему ты расстроен.

Антон: Спасибо за информацию.

Саша: Ну что ты, не обижайся! Я очень люблю этого прекрасного и удивительного писателя, но сегодня тебе лучше читать Зощенко, Ильфа и Петрова...

Антон: Да ну, мне это всё надоело.

Саша: А ты классическую музыку любишь?

Антон: Люблю.

Саша: Тогда пойдём в Зал Чайковского. Сегодня вечером будут играть Баха, Бетховена и Моцарта.

Антон: Во сколько начинается?

Саша: В 7 часов.

Антон: Договорились. Пойдём.

(Sasha: Hi, Anton. How are you doing?

Anton: Don't even ask. I'm upset today.

Sasha: What's that you're reading there?

Anton: Dostoevsky.

Sasha: What specifically?

Anton: *Crime and Punishment.*

Sasha: That's why you're upset.

Anton: Thanks for the information.

Sasha: Oh, come on, don't get insulted! I like that wonderful and amazing author very much, but today it would be better for you to read Zoshchenko, Ilf and Petrov...

Anton: Oh, I'm sick of all this.

Sasha: Do you like classical music?

Anton: Yes, I do.

Sasha: Then let's go to the Chaikovsky Concert Hall. This evening they are going to play Bach, Beethoven, and Mozart.

Anton: What time does it start?

Sasha: At 7 o'clock.

Anton: It's a deal. Let's go.)

The exchanges in dialogues occur between imaginary, one-dimensional characters: Anton is a caricature of a cranky lover of the arts, immediately soothed by the idea of a concert. These "people", their lives and situations are not real nor necessarily relevant to students. To make matters worse, the characters do unnatural things: they leap from topic to topic in a senseless way and change their moods and attitudes at the drop of a hat. In other words, the characters behave unnaturally. This is done in the name of providing examples of specific grammatical and lexical forms in the shortest possible span of time.

How can these problems be remedied? One way is to use authentic texts and dialogues instead of the canned text provided by most textbooks. Unfortunately, most authentic texts, even those which target Russian children (and which are probably not interesting to college students anyway) are so far beyond the level of the beginner that they cannot be used as the main reading comprehension exercises. While it is valuable

to occasionally present students with reading material above their level, to do so regularly would not be wise; see the section on reading (5.8) for more details.

Another approach involves adapting existing literature to the reading level of the students. This approach is taken by Jones and Sidwell (1986) in the beginning text *Reading Latin*. This book presents Roman plays and speeches from the very beginning. At first, the texts are highly simplified, but they become more faithful to the original as students gain proficiency. Summaries in English are provided to give students background information to help them fill in the details. This approach allows students to learn about the literature and other arts of the target culture, in the target language, even before their reading level allows them to read the originals.

The intent of the communicative approach is to provide students relevant with topics to discuss. Underwood (1984) feels that if students are talking about their real lives, about topics like school, work, family, friends, plans, etc., their interest in conversation will reduce the number of times they will have to repeat a linguistic unit in order to acquire it. But, he continues, every sentence they speak should be true and sensible and in the context of the conversation. However, sometimes students are unwilling to discuss their lives for personal reasons. In such cases, they can pretend to be someone else. Even this can provide a basis for nearly authentic conversation.

However, there is no need to dispose with the idea of the pre-constructed dialogue or text entirely. There are ways to make even the above example from Clark more communicative. One way of doing this is providing more context for the dialogues. Who exactly are these people? What is their relationship? How long have they known each other? What interests do they have in common? Why does Sasha ask "What's that you're reading there?" when Anton quips, "I'm upset today"? Why is Dostoevsky a bad reading choice for Anton, especially today? Students can be asked to

imagine the situation and discuss possible answers to these questions in class, in Russian. A picture (even something as simple as the sketch provided with this dialogue in the Clark book) can help to clarify some of these questions. Even an unnatural dialogue can become more realistic when students use their imaginations to provide this unknown information. They might compare the characters in the story to people they know, or they could rewrite the dialogue and share it with the class. Such exercises have no right or wrong answers, only more and less likely ones, and students can discuss which ones are the most appropriate and natural.

Part of the naturalness of communicative language learning stems from the fact that students are not asked to simply manipulate grammatical forms and lexical items. Instead, they are asked to achieve communicative goals, whether that is understanding what someone else is saying, expressing themselves, or interpreting a situation. While they are using grammar and lexicon to achieve these goals, it is not the manipulation of the tools of language which is the focus; rather, it is the result of those manipulations.

Another important aspect of naturalness is allowing interlocutors to continue with their conversation, regardless of miscommunications, misunderstandings, and other factors which may lead to starts and stops in the conversation. Such breaks are part of natural conversation, and learning to negotiate around these breakdowns is part of communicating. Instructions must therefore use caution in correcting student errors during such exchanges. If the student speakers fail to understand each other due to serious errors, this provides them with the opportunity to negotiate around the breakdown. If the instructor deems that failure to correct a serious error would represent a serious disservice to the student (and such decisions must be made by individual instructors on a case-by-case basis), such correction may be provided at the natural conclusion of the conversation. This “hands-off” approach on the part of the

instructor should lead to students feeling more comfortable in their discussions, allowing them concentrate on the conversations rather than worry about whether the instructor will interrupt with corrections.

1.5.2.1 Situated Learning

Situated learning means practicing and using skills in an authentic contexts or settings (Winn, 1993). Thus, for language learning, the situations and contexts provided as a basis for conversation should approximate the real world as much as possible.

This is obviously more easily said than done. The American college classroom is not a farmer's market in Moscow, and it is not filled with native speakers of Russian. In general, the only people to whom students can speak in the classroom is other beginning speakers of Russian and the teacher. Therefore, students must use each other as tools for learning the language. Students will prepare for these interactions through exercises presented in the electronic textbook in order that they need not appear in class unprepared. The role of the instructor in this case is that of a resource, to be called upon when the situated learning setting experiences a breakdown.

The electronic textbook used over a network will provide students with additional opportunities to use the Russian language in an authentic, situated way. They will be able to communicate with each other, as well as their instructor, and even with native speakers of Russian using electronic mail, chat channels, or MOOs and MUDs (Multiple User Object-Oriented Domains). (More information about such approaches can be found in section 2.4.1.3.2). Such environments represent another type of situated learning. Indeed, as computer-based conversations become a bigger and more important part of our everyday lives, students may find themselves actually communicating with native speakers of the target language (not to mention each other) in

this way on a regular basis. There need not be anything artificial about these interactions. Students may ask each other, in Russian, the sorts of questions they might pose to one another in real life. For example, they might discuss homework assignments or what they did over the weekend, for example.

Chun (1994) reports that first-year students of German engage in very natural language behavior using electronic mail as a communication medium: they ask questions, give feedback, request necessary clarifications, and open and close conversations in appropriate ways. Even students who are unwilling to speak in the classroom participate wholeheartedly in the exchanges, providing them with communicative practice which they would not otherwise have had. In Chun's studies, the instructor played a very small role in these discussions, generally not participating actively unless brought into the discussion by a student, and not correcting the students' output. Thus, the majority of the interactions were initiated and maintained by the students, an encouraging sign. The students built the sorts of bonds necessary for good interactions, which Brown and Duguid (1993) stress as an important factor in successful situated learning.

The computer can assist students in these conversations as well. For example, students who find it difficult to find topics to discuss could request topics or cues from the computer. (This idea is based on an in-class technique suggested by Bragger, 1985). The conversation could start along the lines of "Greet each other," and continue with questions such as "What did you do last night?" Role playing activities could even be encouraged. For example, in a unit on shopping, the computer could prompt students with a picture of a department store and provide native-language cues such as "Ask the salesperson if they have any warm hats," "Ask if they have any colors besides the ones you see," and "Say that you prefer a certain color of hat, " etc. This should encourage

the type of open-ended, free conversation of the type which students should be capable. The students could even choose from a list of topics, perhaps based on the one provided by Benevento (1984; see Appendix A). The available topics may should be appropriate to the students level and varied in scope and topic, since students will encounter a variety of situations in real life and should have experience with as many of them as possible.

While these interactions using the computer may be text-based, the capability for live video feeds between individual students sitting at their computers already exists; thus these conversations could be verbal instead. However, as Chun's results suggest, the text-based format gives students more privacy and anonymity, prompting shyer students to take more risks than they would were they speaking face-to-face. Given the encouraging results of Chun's study and the capacity of the computer to provide help when needed, it seems only natural for the electronic textbook to provide such opportunities for free conversational exchanges.

However, it is not sufficient for students to learn how to interact in these situations, no matter how close to reality they come. They must also learn to transfer what they know from one situation to another--to decontextualize what they have learned and apply it in new contexts (Laurillard, 1991). Just because students can manage exchanges in which they buy loaves of bread does not necessarily mean that they can communicate that they would like to know the price of a couch and be able to understand the price when it is quoted to them. A variety of situations, not just the ones presented in the reading texts, dialogues, and other materials in the text, must be exercised. This is true when using any kind of text; it is not a problem unique to the electronic textbook. Instructors must still try to expand upon the materials presented in the electronic textbook, as they have always been free to do with traditional materials. In addition,

Laurillard warns that the decontextualization of knowledge must be gradual, so that students can continue to understand what is going on even when moving to another context. The electronic textbook could begin some of that decontextualization by giving the learner multiple contexts to consider before entering the interactive environment of the classroom.

Unfortunately, no matter how well we imitate real-life exchanges in the classroom or on the computer, Laurillard (1991) points out that the situation is still artificial. The concerns of the student are different in the classroom than in real life, because the goals are not the same in the two situations. In real life, students are trying to communicate what they need to survive, while in class, they may be trying to impress the teacher or attempting not to avoid embarrassment before their fellow students. But an approximation of real conversation is better than no attempt at conversation at all, and sometimes conversations which start out as imaginary develop into real ones.

The main role of the electronic textbook is to use the student's homework time to prepare for in-class communicative activities. But, to imagine a time further into the future, virtual reality may bring the student closer to actual situated learning. Imagine that a student could walk down a simulated Moscow street, enter a simulated shop, and buy a simulated loaf of bread, ~~all the while engaging in meaningful exchanges in~~ Russian. This would be a true situated learning situation, an ideal way to exercise and test a student's skills. However, it is still somewhat beyond our technical reach.

1.5.3 Communication and Comprehension

As discussed above, in order for communication to occur, people must have something to talk about and a reason to talk about it. During real conversations, interlocutors have two duties: to ask for information and to receive it. After all, communication requires that one speaker extract unknown information from another

speaker. Hence the value of communication gap exercises, in which one student must get information from another student (Stevick, 1984). The computer can help learners prepare for such activities.

Clearly, for communication to happen, students must learn to comprehend what others are saying. Students must learn both to produce questions and to listen for the appropriate information which contains the answer to the question. This is somewhat different from the typical listening comprehension exercise, where a text is read aloud and the student is asked to extract some item of information from it. Listening comprehension exercises, while certainly a valuable exercise, do not require students to take an active part in the discussion, only to understand it. But if the student is required to ask questions and understand the answers, the activity is suddenly more complicated-and more natural. The exercises suggested here take that skill one step further. They help students develop the skills to manage the interchange of natural conversation. At this point, such skills can only be developed with the participation of other human beings, whether face-to-face or through the intermediary of the computer.

1.5.4 Other Aspects of Communicative Language Learning

In his discussion of communicative language learning on the computer, Underwood presents a list of ingredients which make up the heart of communicative language learning. These include the points already mentioned above. However, Underwood also stresses the importance of avoiding the learner's native language as well as the explicit presentation of grammar. He also makes suggestions regarding the viability of cuing unconstrained natural input.

One commonly-cited requirement of communicative language learning is that the target language be used exclusively, to the exclusion of the students' native tongue. However, there are clearly times when the use of the native language is necessary. For

example, if instructions for the exercises--especially if the exercise type is unfamiliar--are presented in Russian, students may be unsure about how to approach the assignment, causing frustration and perhaps even a failure to perform the exercise at all. In addition, sometimes concepts and lexical items can be more quickly and efficiently explained in the native language. Underwood's general concern is well-taken: learning to read instructions in Russian is a valuable skill, and Russian should be used wherever possible. However, when an explanation in English will get the job done more quickly, clearly and efficiently, there is no reason not to use it, and to use it without guilt that somehow the student is being cheated of a learning opportunity (Burling, 1983).

Communicative language learning also stresses that grammatical explanations not be presented explicitly. However, Underwood does admit that grammar explanations should be made available to students, should they desire them; his main concern is that students should not be forced to read lengthy grammatical explanations. The electronic textbook will allow students to experiment with different approaches to the way they learn grammar, allowing them to decide whether grammatical explanations are useful for them. Further discussion on this topic may be found in the section on grammar (5.4).

Underwood (1984) has great expectations for the computer as a tool in computer-assisted language learning. He expects the computer not only to cue unconstrained natural input (as in an adventure game), but also to respond to it appropriately in some cases. Unfortunately, this expectation is unrealistic, given the state of current technology. Much of the student's input may be degenerate, making it extremely difficult for the computer to make reliable checks for grammatical correctness, not to mention semantic correctness, even given the most advanced parsers currently in existence for any language. If the computer is not involved in checking the response at all, then it must be checked by a human being--either the student must compare it to a

pre-stored answer, or it must be sent on to the instructor for evaluation. Since students are known not to be very proficient at finding and correcting their own errors, even given a correct answer (as was mentioned in the discussion about the language laboratory in section 1.5.1), unconstrained natural input must be sent on to the human instructor for correction. This is not necessarily a drawback, as it keeps the instructor involved in the homework process, reconfirming the importance of the teacher. All in all, instructor involvement in the correction of free-response exercises is the better option both technologically and educationally. However, constrained natural input can be checked by the computer, and techniques to achieve this end will be discussed in more detail in section 2.5.5.

Communication is certainly at the heart of what we expect language learners to be capable. However, the computer by itself cannot communicate with students, at least not with the technologies currently available. Artificially intelligent programs which would allow students to have a real conversation with the computer are still in the future, although other programs certainly achieve such ends to a limited extent. These programs (outlined by Underwood, 1987) include ELIZA, which asks students about their personal problems, analyst-style; FAMILIA, which gets students to discuss their families; and Winograd's SHRDLU and the MIT Athena programs, which allow students to manipulate objects in limited worlds by typing in full sentences. The fact is, most computer-based conversation programs, unless they directly link humans to other humans, such as electronic mail conversations or interactions within a multiple-user object oriented domain (MUD), are not particularly good at facilitating the development of communicative abilities. The strengths of these various types of simulations are discussed in section 2.4.1.3, and their place in developing the writing skill is considered in section 4.9.4.

1.5.5 Preparing to Communicate

For communicative language learning to be successful, students need more than topics to discuss. They also need the language skills with which to discuss them. Communicative language learning, while it should be the main focus of in-class activities, can only take place if the students have some control of these basic skills. As Bragger (1985) stresses, learning sessions must have a skill-learning component as well as a skill-practicing component. The electronic textbook is principally intended to prepare students for communication by presenting and exercising new vocabulary and grammatical concepts, as well as the cultural contexts in which language occurs. That is, it is intended to address skill-learning. However, the skill-practicing part of learning requires communicative work, and thus must take place primarily in the classroom. The following sections will explore the use of the electronic textbook for skill-learning as a pre-requisite for skill-practicing in the classroom.

1.5.5.1 Teaching Grammar and Communicative Learning

An overly strong emphasis on communication has often resulted in ignoring grammar teaching entirely. But as Douglas (1991) points out, grammar is a tool which is necessary for communication. In section 1.5.3, we saw that inductive learning of syntax and morphology can cause the student to formulate incorrect or incomplete rules, resulting in a lack of accuracy, which becomes an increasingly great cause for concern as the student progresses. Therefore, even in a strongly communicatively based course, grammar must be addressed to some extent.

In theory, textbooks are designed around a particular kind of syllabus. One type of syllabus is the structural syllabus, where each unit addresses a set of grammatical structures. On the other hand, the units of a thematic syllabus focus on themes, such as school, family, or shopping. Functional syllabi are organized by different sorts of

expressions, such as greetings, asking for information, or apologizing. In thematic and functional syllabi, grammar is presented as the themes or functions require it; the order of grammar presentation is secondary to the main thrust of the syllabus.

In practice, most textbooks combine aspects of all sorts of syllabi. Most textbooks present simple structures, such as regular verbs and the most common case forms, before presenting less common irregular verbs and the oblique cases of nominals later on. Many textbooks address themes by providing units where topics such as food, hobbies, or work are discussed. Functions are usually addressed in the very first lesson, where greetings are taught. Byrnes (1988) suggests that this mix of syllabus types is necessary for adults. She suggests a functional approach, but notes the importance of the structural approach for adult learners: “since adults tend to learn analytically and systemically, a [wholly] functional syllabus deprives them of a major learning strategy” (p. 33).

The electronic textbook will incorporate aspects of all of these types of syllabi, but its main focus will be the structural approach; it will present simpler, regular forms of the grammar, morphology and pronunciation before exposing learners to more challenging ones. However, it will also present functions, such as greetings, and themes, such as university life, as necessary to keep communicative learning viable. After all, as Stevick (1984) points out, students cannot do much with the language if they just have some phonology, syntax and lexical items. They need something relevant to do with it, something real to talk about. So while the textbook will be as structurally-based as possible, a great number of departures to functional and thematic approaches will be made to facilitate communication.

Grammar should be taught meaningfully, in a way which contributes to communication. Therefore, the grammatical points presented in any given lesson must

fit in well with the overall theme of that lesson. In addition, the textbook must avoid overwhelming students with too many grammatical forms at one time. Only the forms necessary to the themes of the unit should be presented (Benevento, 1984) and subsequently used in a meaningful, communicative manner.

1.5.5.2 The Importance of Context

One of the perennial complaints about the teaching and drilling of grammar is that the exercises often make no use of the context which would make the grammar meaningful. Compare the two examples (adapted from an example from Byrnes) below:

- a. Instructions: Replace the subject with a pronoun

Пётр изучает математику. ____ изучает математику.

(Peter studies mathematics. *He* studies mathematics.)

- b. Instructions: Fill in an appropriate pronoun.

Это мой брат Пётр. ____ изучает математику.

(This is my brother Peter. *He* studies mathematics.)

In example (a), the second sentence does not follow logically from the first sentence. Yet this is precisely the type of pronoun drill we often ask students to perform. The example in (b) asks the student to perform precisely the same task, yet the exercise is much more meaningful. The student ~~must read the entire first sentence~~ (instead of just looking at the subject, as is the case in the first example). The pronoun which the student fills in actually has a referent: “my brother Peter.”

Context carried throughout exercises also results in a more communicative effect. But again, as Bragger (1985) points out, most textbook exercises arbitrarily skip from one topic to another. Take this example from Clark’s *Russian* (p. 205):

1. Вот Боря. Интересно, куда он (*is walking*)?
2. Мои родители не любят (*to fly*).

3. --Вы часто (*drive*) на Чёрное море?

--Нет, я никогда не (*drive*) туда.

(1. There's Borya. I wonder where he is going?

2. My parents don't like to fly.

3. --Do you go to the Black Sea often?

--No, I never go there.)

Students need not even pay attention to the semantic content of the sentences used in such exercises, since it generally does not affect whether they get the exercise right (Dakin, 1973). This is a dissatisfaction of many teachers with existing textbooks, according to Benevento. These exercises do not allow students to improve their reading comprehension as they work on their grammar. But if the individual problems in an exercise follow the logical flow of a normal conversation, such as in the exercise given below, students will be compelled to follow the storyline as well as fill in the blanks.

--Вот Боря. Интересно, куда он (*is walking*)?

--Наверно, в гараж. Ведь он там (*works*).

--Да, (*I know*). Но я (*thought*), что он обычно (*drives*) туда.

--Да, но сегодня утром его жена и их соседка (*drove*) в аэропорт.

--Почему?

--Потому что соседка (*is flying*) в Одессу.

--Почему их соседка не (*go*) поездом в Одессу?

--Потому что она (*is afraid of traveling*) поездом.

--Правда? А я (*am afraid of flying*)!

(--There's Borya. I wonder where he's going?

--Probably to the garage. After all, he works there.

--Yes, I know. But I thought that he usually drove there.

--Yes, but this morning his wife and their neighbor drove to the airport.

--Why?

--Because their neighbor is flying to Odessa?

--Why doesn't she take the train to Odessa?

--Because she's afraid of taking the train.

--Really? I'm afraid of flying!)

Bragger suggests that non-meaningful drills may fail precisely because of the non-sequiturs between individual sentences in the drill. He writes: "Perhaps one of the reasons why students do not answer our questions or follow along easily in exercises is that we are asking them to do something that is simply not a normal process for the human mind." This is a valid point. Non-sequiturs are difficult to follow even in our native languages; why do we expect that students of a foreign language to follow them? Other researchers (Robinson et al., for instance) have found that context helps students learn new grammatical forms and lexical items, so it is reasonable that context, even in basic grammatical exercises, would also be helpful.

The theory suggested above (that exercises done within the context of storylines are more effective than those done with random sentences) could be tested with the electronic textbook. That is, the performance of groups of students working with exercises of each type could be compared. In addition, a study could be conducted to determine whether such contextualized exercises serve as a vocabulary review as well as a drill of verbal forms.

1.5.5.3 The Importance of Extra-linguistic Information

The electronic textbook will be particularly useful for bringing non-written information (such as sounds and pictures) into the mainstream of language education.

Currently, audio material is provided to students in the form of cassette tapes and is intended for their independent use. But unless there is a lab workbook which allows students to provide a written record of their work, it is very simple for students to avoid using the audio materials altogether. Pictures are generally not used as an important part of homework exercises either. The reasons for this are clear. Even black and white pictures can be costly to include as part of a textbook, and they take up a lot of space, making them impractical as a basis for homework assignments.

While the importance of the presence of illustrations in textbooks cannot be denied, they can give only minimal information about the target culture or other extra-linguistic information. They cannot show the body language people use when they speak, for example. Nor do they clearly show the background setting for the speakers. For these reasons, some instructors have used videotape to provide this context.

Computers can incorporate visual, aural and textual materials in a way that no other medium has been able to achieve in the past. Since all these materials are integrated together in the textbook, the extra-linguistic materials are no longer "supplementary" and new exercise types are made possible. For example, students might see a picture of a girl eating an apple and hear (or see) the question "What is Masha doing?" eliciting the answer "~~She is eating an apple.~~" Similarly, the question "How does Masha get to work?" could be answered with "She goes by car" if the prompt is the sound of a car driving along. (The idea for using sounds as cues comes from Dakin, 1973.) A variety of exercises of this type are planned as part of the electronic textbook.

Other researchers and educators have proposed a variety of creative ways to use visual and aural materials, and many of these would be appropriate for the electronic textbook. For example, Mosback (1990) suggests using pictures, instead of text, to

present the new lexical items in a unit. In addition, he proposes tasks which ask students to listen to a text and then perform a task. For instance, if the text concerned a trip around town with stops at various stores, students would trace the route on a map on the screen. Or, if the text described the location of objects in a room, students could be asked to move those objects into their places.

Grammarland, described by Higgins & Johns (1984), is a microworld in which students move stick figures through the rooms of a house. (Microworlds will be discussed in greater detail in section 2.4.1.3.1.) The figures are moved when students enter correct sentences which constitute a command, or get information about the location of the characters by asking the computer:

Computer: Is Mary here?

Student: No.

Computer: I agree.

Student: Where is Mary?

Computer: In the kitchen.

Student: Bring Mary in.

Computer: OK... (p. 76)

This type of exercise is particularly exciting, because student input actually affects the appearance of the picture on the screen.

The exercises discussed above demonstrate the variety which can be achieved when the computer is used to its best advantage. They all have one thing in common: they use the computer to facilitate communicative learning.

1.6 The Characteristics, Roles and Responsibilities of Learners

In the preceding sections, the structure and use of the textbook were discussed. Now we will turn to the characteristics, roles and responsibilities of the learners using

the textbook. A variety of learning styles will be discussed, followed by some ideas about how to involve the learner in the educational process, and finally, some ways to help the student learn.

1.6.1 Learning Styles

It is a generally accepted fact that people learn in different ways. Therefore, it is necessary that the electronic textbook provide a variety of materials which accommodate the strengths and weaknesses of a wide range of students.

A learning style refers to the way the mind of an individual operates while engaging in some kind of thought process or other intellectual activity. The idea is that each of us has a natural disposition towards certain ways of thinking and reasoning. The most commonly cited learning styles (given variously by Hadley, 1993; Shrum and Glison, 1993; Naiman, Fröhlich, Stern and Todesco, 1978; Omaggio & Birckbichler, 1977) include:

- sensory styles (visual, written, listening, activity)
- field-independence and field-dependence
- broad and narrow categorizing
- analytical and global thinking
- flexibility
- cooperativeness and competitiveness

Unfortunately, there seem to be as many sets of learning style characteristics as there are researchers exploring them. Since there is no one commonly accepted, well-defined list of cognitive styles, only the most commonly discussed ones (mentioned above) will be explored here. It is important to keep in mind, too, that the oppositions given above represent a continuum. That is, it is inaccurate to say that a given learner is a visual learner as opposed to being an activity learner. A person might be strongly visual, while

at the same time strongly disposed towards activity learning, while another might be strongly visual and less comfortable with activity learning. Some people are strongly field-independent, while the cognitive disposition of others might be termed weakly field-independent. Tendencies, not absolutes, are the center of discussion here.

1.6.1.1 Sensory styles

One of the most commonly discussed learning style distinctions is sensory style. These are the learning styles which rely on the senses of vision, hearing and touch. The *Edmonds Learning Style Identification Exercise* (ELSIE) was built to identify the strengths and weaknesses of individuals in the four major sensory styles: visualization, written word, listening and activity (Reinert, 1976). In the test, students hear a set of fifty words and must indicate their reaction to each word. Some students visualize the concept, activity or object associated with the word, others see it in their minds as it would be written, still others have no additional reaction beyond hearing the word, and the rest experience a physical or emotional reaction to the word.

Certain types of learning materials are more appropriate for some students than others, depending on their individual learning styles. For example, a student who is weak in the listening area will have trouble learning from purely auditory input. Similarly, learners weak in the written style may not benefit from the use of a written presentation accompanying a listening text, while learners who are strongly disposed towards the written word might be well served by such a presentation. And activity learners, who feel a physical or emotional reaction to words and may often be seen doodling or taking copious notes in class, may benefit from a computer-based approach that forces them to press a key or click the mouse on a regular basis, because this will keep them physically involved. And visual learners will certainly benefit from the fact that computers can provide images much more readily than can a paper-based textbook.

1.6.1.2 Field Independence and Field Dependence

Another widely discussed and researched learning style is that of field-dependence versus field independence. Field-independent learners are characterized by their ability to distinguish a concept from its context, generalize ideas and easily transfer them to another environment. Field-dependent learners, on the other hand, tend to view such information as a whole and may have trouble extracting main ideas from the details. They may be distracted by the widespread use of unknown features in the target language, to the point that they will not be able to attend to the known features (Naiman, Fröhlich, Stern and Todesco, 1978). The *Group Embedded Figures Test* (Oltman, Raskin and Witkin, 1993, cited by Hadley, 1993) and the *Hidden Figures Test* (used by Naiman, Fröhlich, Stern and Todesco in their 1978 study) can both be used to measure of the degree of field independence of an individual.

Bialystok and Fröhlich (1978), among others, have shown field-independence to be a positive factor in foreign language aptitude. This is because field-independence correlates with better learning and demonstration of the knowledge of grammar and other formalized knowledge types (Raschio & Lange, 1984; Hansen & Stansfield, 1981). It appears, then, that traditional teaching and testing of grammar and other analytical skills favors field-independent language learners. That is, these learners appear to be more successful than their field-dependent counterparts due to the fact that success in language education is often measured on the basis of grammatical accuracy. For educational materials to benefit field-dependent learners, then, a greater variety of approaches to grammar teaching must be implemented. The important grammar points need to be more clearly set forth to such learners. In addition, exercises which show these learners how to use the grammatical points in a wide variety of contexts need to be presented.

1.6.1.3 Narrow and Broad Categorizers

This categorization refers to the clarity of detail perceived and used by an individual. A broad categorizer constructs rules which allow a large number of examples to be explained by one rule. A narrow categorizer, however, will construct rules which can only account for a few pieces of data.

Naiman, Fröhlich, Stern and Todesco hypothesized that a good language learner would be neither a broad nor a narrow categorizer, but would fall somewhere between the two extremes. The broad categorizer would tend to overgeneralize about rules and overapply them, while the narrow categorizer would have so many rules to deal with that applying them properly would be extremely difficult. They predicted that narrow categorizers confronted with unknown structures would be more likely to substitute another, known structure in its place. This hypothesis was borne out in their study.

This distinction may be related to the phenomenon called “Leveling-Sharpening” by Shrum and Glison. People who level tend to blur similar memories, while those who sharpen keep the distinction between memories more clear. It seems reasonable to assume that broad categorizing and leveling are closely related traits, if not just different aspects of the same trait. The same could be said for narrow categorizing and sharpening. Careful presentation and exercising of materials is important for the success of both types of learners.

1.6.1.4 Analytical and Global Thinkers

Another continuum of learning style refers to the systematicity of a learner’s approach. Analytic learners are very methodical. They do well learning grammar details, would rather look for words in a dictionary than guess them from context, and may not do well in communicative exercise situations. On the other hand, global learners are more comfortable skipping from the understanding of parts to a conception

of the whole. They are less successful at learning grammar, but they are comfortable with guessing strategies and prefer communicative practice. Global learners work in a more intuitive and random manner than do the analytical thinkers, who may be much more deliberate in their thought processes. The effects of these traits seem to hold much in common with a learner's tolerance for ambiguity, another often-mentioned learning style. A person with a high tolerance for ambiguity deals with uncertainty well. Therefore, this sort of person would not be overly concerned about not understanding everything which occurs in the language classroom. However, someone with a low tolerance for ambiguity may be made nervous or frustrated by too many difficulties or unknown factors. Thus, learners with a high tolerance for ambiguity are more able to cope with the constant incompleteness that accompanies learning a foreign language, while others with a lower threshold may be more prone to drop the class.

Both styles have the potential to provide constructive tools to learners. Global thinkers, and those with a high tolerance for ambiguity will take much more quickly to learning techniques which ask them to make guesses, and this tendency will serve them well when faced with new words and concepts. On the other hand, the analytical thinker will be much more adept at using rules and organizing concepts. The electronic textbook must provide both types of learner with the opportunity to use the skills in which they are strong, while encouraging them to learn to think in the manner to which they are not accustomed.

1.6.1.5 Flexibility

Flexible people can think of a number of answers to a question or a variety of ways to solve a problem, while inflexible thinkers usually have only one answer to a question. Another learning style mentioned by Shrum and Glison which may be related to flexibility refers to the student's orientation to closure. Students who feel a need for

completion or closure in their learning activities be frustrated by open-ended conversations. “Open learners”, who are more tolerant of this lack of closure, are better at using effective language learning strategies and learn more by osmosis. Flexible and open learners should be encouraged to share their ideas with their less flexible counterparts, so that everyone can benefit from seeing the different ways of thinking about various topics.

1.6.1.6 Competition and Cooperation

This distinction involves the desire for cooperation as opposed to competition. Some learners prefer to cooperate with their fellow students, while others feel a need to compete with them. Shrum and Glison suggest that it may be that the American educational system fosters competition more than it does cooperation, which may be detrimental to learners who learn by cooperation. Competition can foster feelings of anxiety, guilt, fear of failure, and other negative reactions, while cooperative learning can raise esteem and perhaps even improve the student’s use of cognitive strategies.

The communicative classroom relies on cooperation between learners for its success. Competitive learners may have to learn to work better with their fellow students to achieve these goals. However, the needs of competitive students should not be ignored. For them, competition may foster motivation. Allowing competitive students to compare their scores with those of their peers (anonymously and at the discretion of each individual) can provide this motivation with no negative effect on students who are less competitive.

1.6.1.7 The Effect of Learning Styles on Language Teaching

Given the importance and the widespread effects of cognitive styles on our students, perhaps a series of tests to diagnose learning styles (such as ELSIE, the Swassing-Barbe Modalities Index or other instruments) should be administered at the

beginning of the course of study. The tests could be created or adapted so that they could be presented on the computer, just like the rest of the course. Then the electronic could present appropriate materials on the basis of those results.

However, Naiman, Fröhlich, Stern and Todesco found that the results of tests intended to measure cognitive strengths sometimes provided a less reliable predictor of a student's language learning success than did interviews with the students or their teachers. A number of explanations could account for this. It could be that the tests did not actually measure the traits they were intended to evaluate. Or perhaps the testing environment was sufficiently different from a true learning environment that the students' reactions were altered.

The study concluded that the language learning task is of such complexity that knowledge of an individual's cognitive strengths does not accurately predict how that learner will perform. The authors conjectured that certain cognitive styles, such as field independence, may be crucial at more advanced levels, while other strengths may be important at the beginning levels. But on the whole, it is difficult to predict how tests of cognitive ability could best be used to provide appropriate materials.

Another drawback of presenting materials solely on the basis of a test is that it undermines the control that the students have over their educational experience. In addition, administering such evaluation measures is a time-consuming process, and their appropriateness in a classroom atmosphere (as opposed to in a research environment) is questionable. Given these difficulties, it seems reasonable to give students control over their educational choices. After all, most students are capable of learning through several different modes of presentation (LaReau & Vockell, 1989). Thus, it is not necessary to limit them to just one mode of presentation, just because a test or interview indicated that it would be the best approach for them. Allowing students to choose from

a variety of approaches may also help keep their interest high as they explore different ways of learning.

No matter which traits individual students possess, it is important to give them the opportunity to “learn to learn” in a variety of situations. They should use exercises which allow them to exploit their natural abilities, but they should also be exposed to those which prove more challenging for their talents. For example, a competitive learner may not initially learn well in a cooperative environment which stresses communication; however, without being forced into such a cooperative situation that learner may never otherwise learn good communication skills.

Thus, while it is important to keep in mind all the learner style types when creating a battery of exercises for the electronic textbook, learners need not always be exposed to the types of exercises which fit best with their styles. Exposure to activities not suited to their cognitive disposition may help boost their success in the use of that style. As students use different types of exercises, they will discover which ones they find the most useful, and it is to be hoped that they will gravitate towards those types when they are given the choice.

Finally, Naiman, Fröhlich, Stern and Todesco suggest that one of the best ways for students to learn better is to encourage them to share their learning techniques and experiences with each other. In the context of the electronic textbook, this could be achieved through the use of electronic mail for communication, as suggested above.

1.6.2 Informing Students of Goals

Even more vital to student success than awareness of cognitive style is awareness of goals. As Royer, Bates and Konold (1984) point out, a “common complaint among students in every academic area especially at examination time, is that they frequently do not know what they are expected to learn.” Students want and need

to be aware of the goals which they are supposed to achieve. These goals must be defined not only in the long term (“What do I need to know to pass the final? When I have finished this quarter, what will I be able to do?”) but also in the short term (“What will learning this particular skill allow me to do?” “How can I use this vocabulary in conversation?”) Carter (1985) suggests that giving students a purpose for learning isolated topics will boost their interest in those topics and make it more likely that they will learn them. More specifically, the role those individual concepts play in the course as a whole should be made clear. This, too, will serve to motivate the student.

Royer, Bates & Konold stress that students need to be constantly reminded of learning goals. They should be informed about what it is they are supposed to learn, how their learning will be evaluated, and what sort of performance is expected. Overviews placed at the beginning of the lesson can provide such information. A few existing textbooks present some kind of overview. For example, *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* places examples of new structures to be learned at the beginning of each lesson, albeit with no further information. And *Russian: Face to Face* gives information about grammatical, communicative and functional goals at the beginning of each lesson.

Students need not be informed of all lesson objectives at once. Steinberg (1991b) states that when a large number of objectives are stated at one time, students tend to ignore them. One reason for this may be that students are often eager to get homework done, and reading an overview may not seem to be an important part of that. Therefore, in order to make students aware of objectives, the full range of objectives may be presented at the beginning of the lesson (as the textbooks mentioned above do), and then individual goals repeated immediately before relevant exercises. For example,

if a particular unit of the textbook concerns the dative case, the following goals might be given at the beginning of the lesson.

In this lesson, you will review the dative case, which you first learned in Unit 12. In addition, you will learn two new uses of the dative case. Specifically, you will:

- Review the forms of pronouns in the dative case. You will demonstrate your ability to form them correctly, and receive extra help if you have forgotten them.
- Review the endings on nouns in the dative case. You will demonstrate your ability to form them correctly and receive extra review if you need it.
- Review the endings on adjectives in the dative case. You will demonstrate your ability to form them correctly. Extra review materials will be available if you need them.
- Review the use of the dative case to mark indirect objects (He gave *her* the book.) You will demonstrate your ability to create such sentences.
- Learn the use of the animate nouns in the dative case after the preposition *к* to mean “to someone’s place” (She came *to* my place. They went *to* the doctor.) You will be able to recognize and create similar sentences at the end of the lesson.
- Learn to use impersonal constructions in sentences like “I am bored.” “We are cold.” Both of these constructions use the dative case. (The Russian construction for “I am bored” literally means “To me it is boring.”) Again, you will be able to recognize and create sentences like these by the end of the lesson.

The goals presented above state what the *student* is expected to accomplish, not what the *program* intends to teach them, as suggested by Dick and Carey (1990). In addition, examples of the constructions which students will learn are provided (Steinberg, 1991a). The goals refer to previously presented tasks, thereby encouraging the integration new information with prior knowledge, just as constructivist theory advises. Finally, assistance is promised, should it be needed.

Goals form part of communicative tasks as well. After all, the goal of a conversation is for the participants to find out something from the others that they did not know before. But in the classroom, conversations have another important goal as well: using recently presented grammar, vocabulary, and cultural knowledge. Students should be informed and periodically reminded of this goal. It might be helpful, for example, to tell students which structures they should use in their conversation so that they will take the opportunity to exercise them (Cohen, 1991). Similarly, when students are asked to read, they should be reminded of relevant reading strategies.

Goal statements may also be accompanied by pictures and short demonstrations of the skill to be learned, including spoken or written statements (Smith & Boyce, 1984). For instance, the indirect object use of the dative case could be illustrated by the simple sentence “Она дала ему книгу” (“She gave him a book”) and this sentence could be played for the student and accompanied by a still picture or a video clip illustrating the scene. The pictures and sample sentences will be repeated just before the topic is presented. Examples of how to work individual exercise types may be given as well, just as in traditional textbooks, as in the following instance, taken from Clark:

Б. Отвѣтьте на вопро́сы.

Образец: --Вы письмо́ уже написа́ли?

--Да, я его́ написа́л(а).

1. Он письма уже написал? ...

(B. Answer the questions.

Example: “Did you already write the letter ?”

“Yes, I did.”

1. “Has he already written the letters?” ...)

Properly presented, goals serve as a guide, preparing students to learn new material and to integrate it into what they already know. Giving students goals does not in itself guarantee that they will learn the material which they need to know. However, goal statements let students know exactly what requires their attention and help keep them from spending time on less important tasks.

1.7 Motivating Students

Presenting students with goals and high-quality materials does not guarantee that they will learn from them. This is particularly true for textbook materials, since they are most often used by students working without supervision. Students may need extra help in order to learn alone in an effective manner. In other words, they need to be motivated to learn.

Students need to have the feeling that the time they spend doing homework or sitting in class is useful. In other words, they need motivation. Steinberg (1991b) asserts that motivation is provided by learning activities which are of the appropriate difficulty and which provide a challenge. Appropriateness of presentation and difficulty is especially important to keeping students motivated. If an exercise is too difficult or too easy, students may become discouraged and stop working.

Feedback which rewards students with a short video or audio presentation for good work has long been used as motivation in computer presentations. Such feedback is often elaborate, using motion animation and sound, and is not always educational in

nature. Students who play video games are accustomed to being rewarded with special graphic and audio presentations when they play well, and educational programs have followed this example. However, many students quickly lose interest in elaborate motivational feedback in their educational materials, even to the point that the stimulus which was supposed to be motivating turns out to be annoying--clearly the opposite effect of the one desired. The lesson to be learned here is that motivational feedback should be under the control of the user, who can turn it on and off or interrupt it as desired. Sounds, video, animation, and other presentations which are not directly related to the material to be learned have also been suggested as a way of gaining the attention of learners (Smith & Boyce, 1984). The same caution exercised with their use as feedback should be applied to their use as an attractor. After all, we do not want these materials to distract the students' attention.

It is perhaps the lack of motivation which has caused students to do poorly on rote exercises in the past, suggests Steinberg (1991a). Additional motivation may be necessary to motivate rote learning. Certainly the use of mnemonic devices, such as those discussed in section 1.1.2, can transform the rote exercise into a more creative, motivational activity.

Some learners may be motivated by game-like learning atmospheres. Awarding points instead of tallying correct and incorrect answers is a simple way of implementing this approach. For example, points can be given according to the number of tries the student uses to get the problem right. 1000 points could be awarded for answering a question correctly on the first try, 500 points for succeeding on the second attempt, and so on. When students collect a sufficient number of points, they win the game, and they move on to the next exercise. Another game approach involves a graphic display of progress. The analogy of the game board could be used here: the learner's marker

begins at a start point and progresses towards the finish line with every correct answer given. Higgins and Johns (1984) suggest a gambling format, in which students start out with a set number of points and then wager them according to their certainty that they have the correct answer to a problem. As they point out:

“...the act of making a wager shifts the attention of the player away from the question ‘Is this the right answer?’ towards the question ‘How sure am I that this is the right answer?’ To bet successfully one has to make an objective assessment of the nature of the task set (is it in fact clear-cut or might there be an alternative answer?) and one’s linguistic resources for tackling it.” (p. 47)

Higgins and Johns suggest a wide variety of other game possibilities, asserting that such approaches allow students to assess their progress as they work and give them motivation for continuing.

However, there is little experimental proof that game approaches are beneficial to college-age learners. Certainly they may be helpful for younger students, but it is possible that even the suggestion of making an exercise into a game might be annoying to older students. It could cause them to lose faith in the materials, attributing to them a lack of seriousness. This would indeed short-circuit the intended motivational factor.

Humor may also motivate students, but it too must be used with caution. First of all, what is funny to one person may be considered boring or insulting by another. Second, what might be funny in the community of the classroom atmosphere may not translate well into the computer environment. And third, constant humor might become tiring or trite. Thus, most developers of courseware suggest exercising extreme caution in the use of humor, and others warn against using it entirely. Therefore, due to the impossibility of predicting the effect of humor on all the groups using the electronic textbook, its use will be avoided.

Given the dangers of the various types of feedback discussed here, the only reliable motivational approach is to ensure that exercises are of the appropriate difficulty level for the target audience. As we have seen, there is a distinct possibility that adult learners will find non-educational feedback annoying or insulting instead of motivational. Thus, the electronic textbook must serve as a laboratory in this arena. Learners will be allowed, in certain cases, to choose games or elaborate feedback, and asked to give their reactions to these approaches, both in the short term (after one exercise) and in the long term (after several weeks of having the option available). It may be that such motivational factors may initially be attractive to students. However, it is likely that they will lose their appeal over time.

This will not be the last discussion of feedback in this dissertation: the purpose of this section was to examine non-educational feedback in light of its possible motivational attributes. Feedback which serves to educate the student and point out errors and areas for improvement will be explored in section 2.5.1.

1.8 The Role of the Instructor

So far in this chapter we have discussed materials and students. But where does the instructor fit into all of this? The electronic textbook is not intended to eliminate human instructors, nor can it be expected to do so. ~~Rather, it will give teachers more~~ time to prepare and conduct communicative activities and to address the most serious learning difficulties experienced by students.

Students want a teacher available to address specific problems (LaReau and Vockell, 1989). In a survey of students who used a particular interactive videodisc system for communicative language learning of English, 55% felt that they could learn more from humans than computers (Scott, Jolly and O'Brien, 1989). In addition, Steinberg (1991b) has found that computer-based courses which integrate a great deal of

interpersonal interaction retain more students than computer-based courses which do not provide this interaction. "In order for full course instruction to be successful," writes Wyles (1984, cited by Steinberg 1991b), "instructors have to understand the system and be willing to serve as nurturants, advisors, and moderators between machine and student." Thus, while the electronic textbook can be used to extend the reach of a teacher's power to aid students.

Alessi and Trollip (1991) discuss the role of the instructor in computer-managed instruction (CMI) systems. The electronic textbook will be one example of a CMI system. The textbook will tell students what they need to do to keep up with the rest of the class, and provide the materials to allow them to achieve this end. CMI systems also provide information to instructors about the progress of students. They can inform teachers that certain students are having difficulty with a certain concept, based on their performance using the materials. It can tell them how long students have been spending on their homework assignments. It can provide information about the frequency with which the student uses the computer. All of this data can help the instructor to aid students.

One possible result of this approach is that some students will get help which they would not have received before, because it will be much easier for the instructor to determine who needs help or encouragement. In addition, since the computer will be in charge of grading more of the homework, the instructor should have extra time to work with struggling students. In other words, the computer will become the first line of defense against student difficulties, instead of the teacher. The teacher remains available to address the most serious cases.

Corder (1988) points out that

"The minimal irreducible and indispensable function of the teacher is to tell the learner what is or is not an acceptable utterance. We can call this his monitoring function. A learner cannot, in this sense, adequately monitor his own performance, whether receptive or productive. If he could, he would be a native speaker of the language!" (p. 124-3)

In other words, since the computer cannot currently perform all aspects of the monitoring task (it cannot yet monitor spoken language, for instance), it is unreasonable to expect teachers to disappear entirely from language learning. Teachers have other advantages over the computer as well. They know what it is like to learn a foreign language, having done it themselves. In addition, they know a great deal more about their students than the computer ever could. They can talk to students about their personal histories and take each student's personality and attitude into account when providing advice or assistance. For its part, the computer can only interpret the typed input provided by a student, and therefore can respond only on the basis of that input

Thus, as LaReau and Vockell put it, "the computer is merely a tool to extend the teacher's capabilities." While it can be used to replace the textbook, it cannot replace the teacher, nor can it replace the other students. Human interaction is one of the main purposes of foreign language learning. Therefore, it must remain a large part of the language learning process.

Chapter 2: Structuring the Textbook

In this chapter, the focus will turn to the roles and structures of the textbook itself. First, we will examine the role of textbooks and computers in language learning. Next, factors which make educational materials readable and usable will be considered. Finally, we will turn to the principal student activities supported by the textbook: introducing material; exercising that material, evaluating student work, and finally, reviewing previously mastered concepts.

2.1 The Role of the Textbook in Learning

The textbook is the centerpiece around which most foreign language courses are built. As a result, the way that a textbook is used plays a large role in defining the curriculum. It must be designed to promote the goals of the course. However, while conforming to these guidelines, the electronic textbook will differ substantially from the traditional textbook. The ultimate goal of this dissertation is to explore the possibilities which the textbook of the future presents. But first, we must define the functions of textbooks in general.

P. Wright (1985), Bragger (1985), Benevento, (1984) and O'Neill (1982) discuss what textbooks must do for their users. To summarize the important parts of their arguments, textbooks must: _____

- Clearly present manageable amounts of well-organized material which is central to the goals of the course;
- Adequately emphasize and exercise important concepts;
- Hold the interest of the learner by presenting creatively designed, non-repetitive materials;
- Contain information about the cultures which speak the target language;

- Ensure that supplementary materials are timely, interesting and relevant to the goals of the course as a whole.
- Serve as a reference work both during and after completion of the basic course;
- Provide materials to allow students to both prepare in advance for lessons, as well as catch up on missed units;
- Address not only the needs of the group, but also the needs of the individuals within that group;
- Provide activities which can be adapted to the style of the class and of the teacher;
- Encourage cooperation between students;
- Assist students in transferring the skills which they learn to the classroom and the outside world.

The electronic textbook must fulfill these functions better than traditional materials do if it is to become an accepted and productive part of education. The following sections will consider the roles of the traditional textbook, the way the electronic textbook will play those roles, and how this change will alter the way we approach teaching, learning and evaluation.

2.1.1 The Role of the Computer in the Curriculum

The electronic textbook will be at the heart of the curriculum which employs it. It will play a variety of roles, some of which have been traditionally played by instructors, tutors, and supplementary materials.

Tasks often traditionally performed by instructors include presenting new material, giving aural and written examples to illustrate that material, and evaluating student performance. The electronic textbook will take over many of the more mundane

tasks, such as grammar and vocabulary presentation, leaving the instructor free to conduct more communicative tasks during increasingly limited available time in class. The computer also has the capability to present a great number of illustrative examples. It can also correct much of the written work performed by students.

Tutors perform a slightly different role than instructors, although most instructors engage in tutoring activities to a certain extent. A tutor assesses the skills of an individual and makes explanations and exercises available as needed. Weible (1987) feels that the tutoring mode is the most appropriate use of the computer. The individualization it provides brings the most troublesome portions of the instruction to the forefront of the student's attention, but allows students who do not require extra help to proceed without this assistance. The computerized tutor can emulate human tutors by giving students increasingly specific hints to guide them to the correct learning path (Kamsteeg & Bierman, 1991). Since the computer can take over the grading of the most straightforward exercises, human instructors can turn their attention to the communicative tasks which they will conduct during contact time with their students.

The role of "supplementary" materials--such as audio and video--grew with the availability of magnetic tape to record and present those materials. However, those materials have often played a peripheral role, and have been used largely outside of class. The electronic textbook, however, integrates these various forms of instruction. Students no longer need to have a textbook, a tape recorder, a VCR and television and computer in order to do their work; all they need is the computer. Thus, the formerly "supplementary" materials become a truly integral part of the new textbook.

Therefore, while the electronic textbook will be replacing the traditional paper textbook, it will also take over some roles which have previously been filled by humans

or by other materials. That is, the textbook will have the opportunity to play a larger role in education than it has in the past.

2.1.2 The Role of the Computer in Communicative Learning

Some instructors feel threatened by the computer, fearing that it will force them out of their jobs or reduce their input into the learning process. Indeed, it has just been asserted that the computer will take over some of the roles previously played by humans, causing this threat to loom more ominously.

However, this threat of replacement will likely not become a reality. The low communicative capabilities of the computer are one reason for this. Indeed, this fact causes teachers to reject computers as a language education tool. Computers are, for the current time, incapable of carrying on real conversations with humans. But even if computers cannot play a direct role in higher-level activities, they can be used to prepare students to participate in them (Wyatt, 1984). The computer may be used to help students perform lower-level tasks which prepare them for more complicated, communicative activities. For example, the electronic textbook will present students with a variety of exercises, grade them, and then report scores to instructors. In addition, it will allow students to submit spoken and typed free-response exercises to instructors for evaluation. ~~Although the computer may not be able to evaluate such open-ended work effectively,~~ it is a reliable system for transmission of those materials to instructors.

However, the computer is also capable of facilitating certain truly communicative tasks. When the computer is combined with an interactive network like the Internet, it provides students with greater opportunities to interact in the target language with their instructors, classmates, and even people outside of their classes. The use of electronic mail between members of a class (both students and their teachers) is already becoming

widespread as a communicative practice tool. The World Wide Web is also an increasingly popular way for students to discover information about the target language and culture outside the confines of the course. Finally, the growth in popularity of MUDs (Multiple User Dimensions) and MOOs (Multiple User Domains, Object Oriented) as forums for group discussion in foreign languages testifies to the feasibility of using the computer in communicative interactions.

Thus, while the computer cannot reliably play the role of conversation partner, it can help prepare students for communication with others, and even facilitate the ensuing conversations. The others may be fellow students, instructors, or even native speakers of the language. Regular opportunities for such practice will be provided to students using the electronic textbook.

2.2 Readability and Learnability

Orna (1985) defines a usable text as “one that allows a successful transaction to take place between user and maker.” It should transform an “unsatisfactory state of knowledge” into “a better organized one.” (p. 20-21) As previously discussed, informing learners about the content of the materials to come is one way to prepare them for learning. In addition, however, the materials must be easy to understand and use.

Three major factors are involved in creating a readable text. First of all, the writing itself must be clear and easy to read; concepts must be presented in a simple, straightforward manner. Second, the purpose of the text must be taken into account, as well as needs and characteristics of the people who will be using it. Finally, the materials must be organized logically and clearly.

2.2.1 Clear writing

It is worth reviewing some of the mechanics of clear writing and the ways which have been developed to evaluate materials. First, the requirements of “readability

formulas” will be examined. Next, the question of keeping words and sentences simple will be considered, as well as the use of the passive voice. Finally, the use of lists and charts in the place of standard prose will be explored.

2.2.1.1 Elements of Readability Formulas

For many years, reading researchers have been developing equations to calculate the difficulty of texts. However, the accuracy of such algorithms remains in some doubt (Duffy, 1985). It turns out that fulfilling the requirements of precise readability formulas provides no guarantee that the resulting texts will be usable. “The effects of simplification will depend on the processing demands of the task,” say Fass & Schumacher, 1978 (cited by Duffy, p. 132).

However, reading formulas do take into account important factors such as the length of the words, the number of words in a sentence, and the number and placement of relative clauses in the sentence. It is valuable to examine these factors in greater detail and their applicability to the electronic textbook.

The assumption that shorter sentences are more easily understood seems commonsensical. However, both Duffy and Wright (1985) point out that shorter sentences do not always guarantee improved reading comprehension. For example, compound sentences made of two shorter sentences joined by the conjunction “and” are roughly equal in comprehension level to the two shorter sentences. In fact, Duffy found that comprehension is reliably improved only when breaking sentences containing coordinate conjunctions other than “and”. Also, elevating clause fragments such as participles, gerunds and infinitive phrases to full sentences has no truly significant effect of comprehension. In the view of Felker, Redish, and Peterson (1985) it is more important to control the number of ideas presented and their organization within a sentence than to limit the sentence to a certain number of words. For example, care

must be taken when using embedded and branching phrases. Many of these phrases stand better as independent sentences. In addition, right-branching sentences (that is, with supplementary phrases at the end) are preferred over left-branching ones.

Simplifying sentences is only half the battle: words must be simpler as well. Briem & Loewenthal, 1968 (cited by Wright, 1985) found that given a choice between a verb and its deverbal noun (such as “invite” and “invitation”), readers find it easier to understand the verb than the noun. While Duffy warns that lexical and syntactic simplification are no guarantee that comprehension will improve, Hartley makes some rule-of-thumb suggestions on how to simplify writing. One suggestion is that the number of subordinate clauses in a sentence should be limited to two. For example, the sentence:

“Keep in mind that impersonal constructions which express need or necessity using the words *НАДО* and *НУЖНО* can be used with most verbs in the infinitive.”

could be clarified and simplified to read:

“Some impersonal constructions express need or necessity. Such sentences contain the words *НАДО* or *НУЖНО* and a verb in the infinitive. Almost any infinitive can be used in this way.”

While Hartley notes that while little research has been conducted on the effects of paragraph lengths on readability, it would seem logical that shorter, well-spaced paragraphs would be easier to read than longer paragraphs placed close together.

In general, then shorter words, sentences and paragraphs are to be preferred to longer ones. However, it is important not to become a slave to an arbitrary rule that “Shorter is Better.” Sometimes, a longer sentence or a less common word serves a specific purpose. When this is the case, longer phrasings may be used.

Another common suggestion (made by Hartley, among others) is to use the active voice instead of the passive whenever possible. The passive voice is commonly used in grammar explanations, because it is a natural way to express the functions of words. However, the imperative can be used to express the same ideas in a simpler, more direct way. Note the following examples from Clark:

“К is the preposition which is used for *to* when the destination is something one can not enter.” (p. 310)

“An IMPERFECTIVE verb is used to describe an action that is, was, or will be in progress, continuous, or repeated with some frequency.” (p. 276)

They could be rephrased as follows:

“Use the preposition К to express movement towards a destination which one cannot enter.”

“Use **imperfective** verbs to describe:

an action that is, was, or will be progress

a continuous action

an action which is repeated with some frequency.”

Note that the second paragraph above uses a list format. Hartley’s research indicates that readers perform better using list formats instead of a run-on format common to the presentations in many textbooks. *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* uses run-ons throughout its explanations and exercises:

4. Ива́н Ива́нович пойдёт на рабо́ту в 8 часо́в. Мы ... в теа́тр в 6 часо́в. О́ни ... в кафе́ в 9 часо́в. Зина ... в институ́т в 2 часа́. Васи́лий Никола́евич ... в библиоте́ку в час. Мы ... в теа́тр в 7 часо́в. (p. 109)

(4. Ivan Ivanovich *sets off* for work at 8 o'clock. We ... to the theater at 6 o'clock. They ... to the cafe at 9 o'clock. Zina ... to the institute at 2 o'clock. Vasily Nikolaevich ... to the library at one o'clock. We ... to the theater at 7 o'clock.)

Performing such exercises in class is sometimes trying, because the lack of numbered problems makes it difficult to indicate to students where to begin reading. Below, the same exercise has been lettered, numbered and placed in a list format for better readability.

4. *Образец:* Ива́н Ива́нович пойдёт на рабо́ту в 8 часо́в.

1. Мы ... в теа́тр в 6 часо́в.
2. О́ни ... в кафе́ в 9 часо́в.
3. Зи́на ... в институ́т в 2 часа́.
4. Васи́лий Никола́евич ... в библиотéку в час.
5. Мы ... в теа́тр в 7 часо́в.

(E. *Example:* Ivan Ivanovich *sets off* for work at 8 o'clock.

1. We ... to the theater at 6 o'clock.
2. They ... to the cafe at 9 o'clock.
3. Zina ... to the institute at 2 o'clock.
4. Vasily Nikolaevich ... to the library at one o'clock.
5. We ... to the theater at 7 o'clock.)¹

Although they impaired readability, run-on lists are have long been used in textbooks, probably to conserve space and paper. However, on the computer, we need not have any such restrictions. Here, we can, (and should) take all the space we need to

¹These exercises are problematic for another reason. They are not contextualized; they do not follow a logical progression of thought. The importance of presenting contextualized exercises was discussed in section 1.5.5.2.

make presentations readable. Hartley also suggests that readability in lists can be further enhanced by the use of Arabic numbers and bullets (•) to mark individual list entries, instead of Roman numerals, which are harder to read and often not understood by the reader.

Sometimes, prose is not the best way to present a concept. Even prose organized into lists or accompanied by tables may not be appropriate. Flow charts, with their conditional “if-then” statements, may instead be used to improve reading comprehension (Felker, Redish, & Peterson, 1985). Let us compare a prose presentation based on conditional sentences to a flow chart presentation of the same information. (The prose presentation is from Clark, p. 209-10.)

COMMANDS: (THE IMPERATIVE MOOD)

Повелительное наклонение

To form the imperative of Russian verbs, drop the ending of the third person plural (ОНИ) form of the verb. Then:

1. If the stem of the ОНИ form ends in a vowel, add -Й for the ТЫ command, -ЙТЕ for the ВЫ command:

ОНИ слуша	ют	
Слуша	й!	<i>Listen!</i>
Слуша	йте!	

2. If the stem ends in a consonant, add -И for the ТЫ command, -ИТЕ for the ВЫ command:

ОНИ говор	ят	
Говор	и !	<i>Speak!</i>
Говор	ите!	

3. The stressed syllable of the commands is the same as that of the first person singular (Я) form of the verb.

я посмотрю--он посмóтр	ят	
Посмóтр	й !	<i>Take a look!</i>
Посмóтр	йте!	

я пишу́--онí пиш	ут	
Пиш	й !	<i>Write!</i>
Пиш	йте!	

4. When the *stem* of the Я form of the verb is *stressed* and the О Н Ы form stem ends in a *single consonant*, add -Ь for the ТЫ command, -ЬТЕ for the ВЫ command.

я гóвтóвлю--онí гóтóв	ят	
Гóтóв	ь!	<i>Prepare!</i>
Гóтóв	ьте!	

я буду́--онí буд	ут	
Буд	ь здоров(а)!	<i>Gesundheit! Bless you!</i>
Буд	ьте здоровы!	

A flow chart presentation of the same information is easier to follow and read, as can be seen in Figure 1.

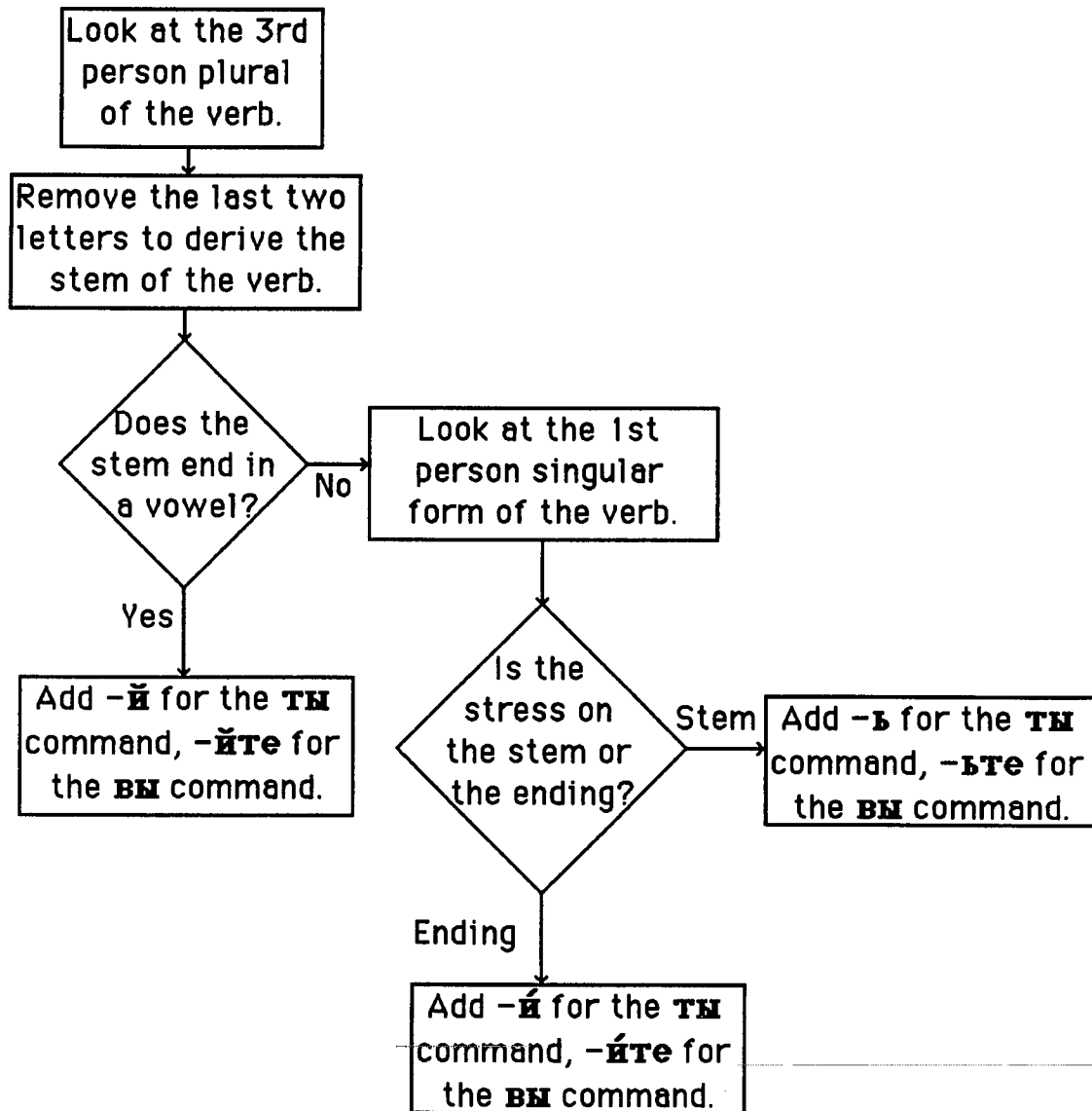


FIGURE 1: A Flow Chart

The computer makes this flow chart presentation even more effective. The computer can sequentially highlight each step, and provide a number of examples at each

stage. The computer version of this presentation may be found on the diskette in the pocket materials.

2.2.1.2 Informational Mapping and Structured Writing

Horn (1985) discusses the value of “informational mapping,” in which “the arrangement of the information on the page reveals something about the structure or interrelationship inherent in that information.” This technique is based on research which concerns the importance of organization in the retention of facts. Informational mapping helps students organize concepts using the space on the screen or page to show the interrelations between the ideas.

Informational mapping, or structured writing, requires the division of information into relatively small chunks (three to five sentences apiece) and the labeling of those chunks (which Horn calls Blocks) for clear reference. These Blocks are then grouped by topic, arranged hierarchically and labeled accordingly. Learners can use the level of organization appropriate to their needs, and do not have to deal with more detail than they desire. That is, if they only need general information on a topic, it can be gleaned from the labels, making it unnecessary to wade through fine print. Experiments cited by Horn have suggested that this sort of structured writing helps students learn better and retain more information. ~~In addition, this type of organization makes the materials useful both for teaching and for reference.~~

This approach to organizing materials can be very valuable in the computer environment. Keeping the reading chunks small and labeling them for content will help students locate the information they need without wallowing through extraneous material. In addition, the material can be linked to the maps which students will use to navigate the text, as discussed in section 3.3.1. Coupled with the concept of

“instructional mapping” (section 3.3.1.2.1), informational mapping will make possible the use of the electronic textbook as both a teaching tool and a reference .

2.2.2 Human Factors in Reading and Writing

Each individual brings expectations and prior knowledge to the reading of text, and this affects how text should be written. In order for reading materials to be successful, the author must be familiar with the material. In addition, the author must take into account the readers’ purpose for using the material, as well as the characteristics of the readers.

2.2.2.1 Knowing the Material

The author of educational material of any type must be very familiar with the topic being taught. Materials written by novices are likely to contain oversimplifications and inaccuracies. Therefore, the author of a language textbook must be an expert in the language, someone who has a great deal of experience teaching the language and who is proficient at describing the structures of the language to people who are unfamiliar with them.

An author’s relationship with the material is very important, according to Orna. Authors possess the knowledge their readers need, and therefore have the responsibility of structuring that information for successful transfer. Authors must be constantly aware of the way their topic appears to those unfamiliar with it; if they are so at home with their subject, they may fail in their efforts to communicate. For example, they may use logical jumps which the reader cannot follow. At the other extreme are authors whose grasp of the topic is incomplete. Such a deficiency is be reflected in poorly constructed prose. Thus, for an instructional text to be clear, writes Orna, the author must be very familiar with the material, but not overly engrossed in it.

The linguist, for example, is quite familiar with the various phonetic, phonological, syntactic, semantic and stylistic facts of the language. Some of this information is useful to students beginning their study of the language. For example, beginning learners of Russian can use concepts such as vowel reduction, the general structure of the verb system, and the meanings of certain derivational suffixes. Knowledge of these facts will help them develop their listening, reading, writing and speaking skills. Other linguistic information, such as the aspiration of consonants, the finer nuances of word order, or the wide variety of synonyms for a commonly used word, is not useful to the beginning student. The timing of the presentation of concepts is also important. It is not appropriate or necessary to explain the full intricacies of topics (such as aspect, for example) upon students' first contact with them. It is enough to first present basic facts; other details can be added later.

In summary, the author's challenge is to be familiar enough with the materials to provide an accurate portrayal of the facts, yet make the explanations simple enough to be useful to the learner. The author's duty is to make distinctions between useful and extraneous material, and to present only material which is relevant and necessary.

2.2.2.2 Knowing the Purpose

Carter (1985) emphasizes the importance of identifying the purpose of the text. A text which is suitable for one purpose, such as classroom learning, may not be appropriate for independent learning. Trying to make one publication serve more than one purpose may cause it to serve no purpose particularly well.

The primary purpose of the electronic textbook is to provide information and exercises for college students learning first-year Russian in a regular college course. It is not directed at students learning on their own, without a teacher. Nor is it intended primarily as a reference work; that is the job of the reference grammar. However, it

must be structured so that a student who has worked through it in the expected manner will be able to use it as a reference later. This will be accomplished with a good search engine to allow students to quickly access whatever information they might need. As much of this information as possible will be presented in context in which it was initially learned. This should help jog the memories of students regardless of their individual learning styles.

2.2.2.3 Knowing the Reader

According to Orna, when authors do not understand who their readers are and how they will use the text, they may write materials which lack vital information or provide unnecessary facts. They may also present information in a way that the readers cannot understand or use.

If communication is to be successful, all the parties involved in the exchange must share a common context. This context may be made up of beliefs, prior knowledge, and other factors (Olson, 1985). Context is more evident in speech than in writing. This is due to the fact that speakers can draw upon their surroundings for it. They may also know the people with whom they are conversing, providing yet more context. But the same is not true for people reading a textbook. Those people are most likely not acquainted with the writer, nor can they approach the writer face to face. Therefore, since no common context is readily available, writers must convey both a message and an appropriate context through their prose. This is what makes text different from speech. In writing, meaning cannot be negotiated. Therefore, to make up for this lack of negotiation, writers must try to anticipate the needs of their readers.

The question is where to start in developing this context. Writers can try to guess what contexts readers will have, and then write their content accordingly. The risk here is that they will make the wrong guesses. Alternatively, they can try to build

up a common context in their writing, and use this as a basis for the content they present. To do this, they must have general familiarity with the audience. However, some of the burden for developing context falls on the reader as well. The reader must be literate enough to interpret the information the writer has provided.

One piece of context which beginning students of Russian may not have involves knowledge of linguistics or its terminology. A textbook cannot assume that all students are familiar with jargon such as “ending” and “tense,” nor that they will know how to use those concepts once they are defined. Some students may know these terms from English classes or other foreign language courses. But students who do not know them will need clarification. They should have access to those clarifications, while students who do not need these explanations should be allowed to continue working. A hypertext approach, in which users can click on words and phrases to access additional information, will allow the electronic textbook to serve a range of audiences in such cases. Students who do not understand a term will be able to click on that word, prompting the computer to present a definition, examples or other clarifications. Such approaches are becoming increasingly familiar to people as they use World Wide Web more and more.

Just as text written to serve one need may not fulfill other needs, texts written to serve one population may be unsuitable for other groups. For example, *Russian: Face to Face* is intended for use by secondary school students. The animals and cartoons that make this text attractive and appropriate to younger audiences make this book inappropriate for adults. Similarly, *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* lacks much of the vocabulary and many of the themes which American adults would need were they to visit Russia. It does not provide vocabulary which would allow them to describe their lives in the United States, making it unsuitable for them.

2.2.3 Clear Organization

Good teaching requires efficient and effective communication of knowledge to learners. Arranging materials in a textbook is the most difficult part of the design process. The reason for this is that there is no one correct way to organize materials (Chalker, 1984). Should regular forms be presented before irregular ones? Should certain types of complex sentences be introduced early in the course, due their high frequency in the language? Should topics which are closely related be presented at the same time, or should they be divided up? These are only a few of the questions which the writer of a textbook might ponder.

Both Laurillard (1991) and Raschio and Lange (1984) state that learners must be given controlled and well-defined information to assimilate. They feel that this can be best done when instruction addresses one specific goal at a time within the context of already well-known material. In this manner, the connection between new and known content can be properly established. So perhaps more important than which pieces of information are presented is how they are presented.

The exact order and organization of the materials specific to this textbook will be discussed later, in sections 4.1 and 4.2. Suffice it to say here that the question of how to arrange materials is one with no simple answer. However, certain requirements may be stated and met. First of all, items should be limited to those which are relevant and appropriate to the needs of the beginner. Second, the materials must facilitate the integration of new knowledge into that which the student already knows. Third, the text should anticipate the questions readers may have and provide them with the information they will need. Finally, vocabulary, grammar, and cultural information should be presented in small doses, so as not to overwhelm the learner. This last point will be discussed in the following section.

2.2.4 Small Doses

Course materials must be broken into manageable chunks if students are to learn them effectively. There are several ways of doing this. However, there are also some methods to avoid.

Goals may be sequences of learning steps (Bednar, Cunningham, Duffy and Perry, 1992; Smith and Boyce, 1984; Higgins & Johns, 1984.). This approach is generally known as Programmed Learning, and is often characterized by a question-and-answer dialogue. In this approach, students are guided through each step which makes up the overall goal. At each step, the materials give the learners something new they need to know in order to solve the problem at hand. Students must respond in some way at each step: for example, by choosing a letter or typing in a word. The students' performance is evaluated before continuing on to the next step. In addition, the students can be guided by the appearance of materials on the screen. Unlike in a paper-based textbook, text can be changed on the screen as the presentation progresses. This may be observed in the presentation of the imperative mood of verbs on the diskette. Different sections of the flow chart (given in section 2.2.1.1, above) are highlighted in order to demonstrate each step in the process. This approach aids in directing the attention of the learner to a specific portion of the problem at hand.

One problem which students commonly encounter when learning a foreign language involves vocabulary. This problem, too, can be combatted by dividing material into smaller portions. Merrill and Salisbury suggest that traditional flashcard-style drill is not effective because while it is easy to associate one stimulus with one response, the task is much more difficult when many such pairings are involved. The result is that students get confused matching stimuli with their appropriate responses. However, if only a limited number of such pairs are introduced at once (five to nine,

instead of 25 to 30), associations can be made with greater ease. (The use of mnemonic devices, as described in section 1.1.2, should help even more in making those connections.) Atkinson (1976) describes a drill-and-practice strategy in which only five to nine items are exercised at one time. This number is in keeping with Miller's theorized limit of "Seven plus or minus two" items in short term memory. In this approach, a working pool of items to be learned is established. If the number of items in this pool is less than five, more items may be added from a review pool. Each item has a number assigned to it which reflects its "state"; that is, the number of times the student has been exposed to identified it. For example, a value of one indicates that the student has had one exposure to the item, two indicates two exposures, and so on. Once the student has correctly identified the item enough times (say, three), the item moves into the review pool, from which it will be recalled at regular intervals. After enough success at the review level (for example, when the state reaches six), the item is removed from the system entirely, as it has now been thoroughly learned by the student.

However, care must be taken when dividing materials into small packets. If the packets are too small, and too much unrelated material intervenes between the individual presentations, the materials will appear to lack cohesion and logic. This is a complaint which some instructors have about *Русский язык для всех*. While the book does a good job of presenting information in small chunks, the fact that the chunks of closely related topics are spread throughout the textbook makes later review difficult. For example, the singular forms of the possessive pronouns are introduced and exercised in Lesson 4. Plural possessive pronouns are not introduced at this point, because noun plurals have not yet been discussed. But when plural nouns are introduced in Lesson 5, the plural of the possessive adjectives are not introduced at the same time; they are introduced in Lesson 7. However, it is perfectly natural for teachers

to begin using the plural forms of the possessive pronouns during Lesson 5, which confuses the students. To avoid such problems, the possessive plurals should be introduced at the same time as the singular ones, or in the same chapter as the plurals. This would require a restructuring of the presentation of grammar.

Therefore, while it is advisable to separate information and exercises into small doses, care must be taken to avoid making those divisions too small. They can interfere with the continuity of instruction.

2.3 Practical Considerations

Now that the basic aspects of language pedagogy, textbooks and computers have been explored, it is time to turn to the presentation of the materials themselves. But it is important to keep in mind that good exercises, feedback, motivation, and evaluation are not enough to help students learn what they need to know. Students also need clear instructions and other help in order to achieve their goals.

2.3.1 Giving Instructions

Knowing how to use materials is a very important part of the learning process. It does not matter how good a textbook is if students do not know how to use it. Therefore, instructions for the performance of exercises and other uses of the materials must be clear and the student must be allowed to refer to them as needed.

Advocates of natural approaches to language learning, in which students get as much input as possible in the target language, suggest that even instructions be in the target language. However, the level of the language used in instructions is often far beyond the level of the student. That is, in many cases it is far past the learner's current level (i) or the target level ($i+1$). Thus, the case for putting instructions in the target language is a weak one. There is also a logical consideration in this case: the purpose of instructions is to help the student use materials or perform exercises; they should not

in themselves be a reading comprehension exercise. A possible compromise in this situation is to provide the instructions in the target language, but to allow the student to see them in their native language as well, especially at the early stages. This way, the student gets the much-desired extra exposure to the language, but still gets the intended benefit of the instructions. As the student becomes more proficient in the language, instructions can be presented in the target language to a greater extent. The important thing is to ensure that students always have the information which they need to perform the textbook activities.

As all teachers know, the major problem with instructions is that students do not always read them carefully. Steinberg (1991a) suggests that exercises may be designed so that students perform them correctly even without reading the instructions. For example, if the computer poses an open-ended question, the student is likely to give an unanticipated answer. When the computer instructs the student: "Give the name of this shape," students might respond with "Square," "It's a square," or "It is a square." While the computer may be programmed to recognize all of these answers, the student may still experience hesitation about typing in an answer. However, if the computer provides context for the student's response, students can simply fill in the important information: "This is a _____."

Steinberg makes other suggestions for making the performance of exercises more clear. First, the instructions should let the student know what will happen later. If instructions will be available throughout the exercise, even after their initial presentation, students should be informed of this fact so that they do not spend time copying the instructions onto paper for later reference. If further instructions will become available as students progress, students should also be informed about this, so that they do not

worry that they do not know how to do the exercises. Finally, Steinberg stresses the importance of providing instructions clearly. For example, instead of:

“Click on ‘Help’ for more information.”

“Press the space bar or click on the right arrow to go on.”

the instructions should read:

“For more information, click on ‘Help.’”

“To go on, press the space bar or
click on the right arrow.”

The reason for reversing the order is that some students only read the first half of such instructions, and carry out the action even when they do not desire the action provided by the key combination.

In section 2.2.1.1, the benefits of using the list format instead of a run-on prose format were discussed. Steinberg points out that lists may also be used in giving instructions. For example, the instructions for typing the stressed vowel letters might be given as follows:

How to type stressed vowel letters:

Press Option-e, then type the vowel.

However, a clearer method of providing this information might be:

- To type ó:
- hold down the option key
 - type the letter e
 - release the option key
 - type the letter o.

Now you try it. Type ó.

Proper instructions can prevent students from making mistakes before they make them. For example, if students are given free choice in the order in which they approach

topics, they may try to skip ahead to a topic for which they are not prepared. The program should warn them of this fact, and direct them to more appropriate material. This feature is well known to computer users, who are given warnings when they are about to do something potentially undesirable (“Are you sure you want to quit?” “Really delete this file?”)

Finally, since it is not always necessary for students to read general instructions every time they use the program, they should be given the option to skip instructions after they have already read them once. They should also be made aware that they can see instructions at any time (even in the middle of the exercise) if they like.

In conclusion, instructions serve the purpose of aiding students in using the materials. They should not be used as extra language practice at the cost of that assistance. They should be available when needed, but easily dismissed when they are not. They should be clear and easily followed. Finally, instructions should strive to prevent student error before it happens, by giving appropriate warning.

2.3.2 Providing Assistance

Sometimes, no matter how clear the instructions or how high the quality of the instructional materials, students need help. They should not be made to feel that this request for help connotes failure on their part. ~~Requests for assistance or additional information should not be referred to as “cheating” or “giving up” by the program.~~

In addition, any assistance that is given should help the student learn the material, not just to get through it with correct answers. For example, while giving the student the first letter of the correct answer may help the student come up with that response, it does not necessarily help the student learn about the structures and the functions of the target language. Help must be authentic and truly aid in the learning process.

2.3.3 Introducing New Concepts

One example of giving students control over their learning (an idea discussed further in section 2.5.2) is in the presentation of new concepts. When a new concept, such as the basic uses of the instrumental case, for example, is presented, students might be allowed to choose whether to see examples or view the rules first. In the first case, students are encouraged to work out the rules for themselves based on the examples, while in the second, the rules are merely presented to them. In the next step, students have a choice of pursuing the option which they had previously declined, or proceeding directly to the exercises. Finally, students pursue the option (explanation, exercises or examples) which they had previously not chosen. These options are reiterated in the chart below.

First task	Second task	Third task
Examples	Instruction	Exercises
"	Exercises	Instruction
Instruction	Exercises	Examples
"	Examples	Exercises

The choice made by individual students may reflect their desire to work in a deductive manner (using rules) or in an inductive manner (developing rules on the basis of the examples). The use of inductive and deductive approaches is discussed further in section 4.4.1.1. It should be noted, however, that such provisions for variation also allows students to experiment with different options and find the one that works best for them.

2.4 Exercising

In this section, a general overview of the types of exercises commonly used in instruction will be provided. Some of these exercise types will be discussed in Chapter 4, where the teaching of grammar, vocabulary, culture, and other basic skills will be explored in depth. In addition, some other aspects of exercises will be discussed, such as the merit of repeating items and the importance of realism in exercises.

2.4.1 Exercise Types

Given the greater power of computers and the strides made in programming languages and software in general, a far greater number of exercise types are available to computer-assisted language learning than ever before. At first, users did not expect the computer to do much more than evaluate true/false, yes/no or multiple choice items. Then, some designers of educational software went to the extra work it took to evaluate one word answers, and authoring software, such as Duke University's CALIS and Macromedia's Authorware[®], allowed the feedback provided to these answers to be more specific and helpful. Authoring systems such as DASHER allowed students to type in full phrases and sentences and the computer to point out missing or incorrect letters or words. Now, the use of parsers and other sophisticated checking routines allows students to type in full sentences and have their errors pointed out and explained to them (see section 2.5.5, below).

Now that full sentence can be processed, the question is whether there is still use for simple true/false and multiple choice questions or one-word fill-ins. The answer is that such exercises can still play a role in language education if they are used appropriately. In this section, we will review many different exercise types and determine their proper usage in the electronic textbook.

2.4.1.1 Drills

With the growth of communicative language learning and the recognition that such methods help people learn to use language, the role of drills in the foreign language curriculum has come under scrutiny. Since drills are generally neither creative nor communicative, what role should they play in a communicatively-based curriculum?

Drills provide the student with practice in manipulating the forms of the language. Especially when learning a highly inflected language like Russian, control of the forms of the language is extremely important. The idea is to get the student familiar with these forms, and then to gently lead them to more communicative activities with them. Such “structural” practice (Schaffer, 1981) should play a role in a communicatively based curriculum, in order to introduce students to concepts before they begin to use them communicatively. However, an orderly progression between the level of purely structural drills and more “semantically” based drills should be preserved. In addition, a gradual shift between receptive and productive exercises may facilitate the learning process for any given topic. See section 4.4.2 for an extended discussion on the logical, gradual progression from one level of drill difficulty to the next.

Drills for each of the skill areas (listening, reading, writing, speaking and culture) will be discussed in detail in Chapter 4. The purpose of this section is to explore some different types of drills which will be used in the electronic textbook and to discuss the role of each in the curriculum.

2.4.1.1.1 Multiple Choice

One popular questioning format is the multiple choice approach. Exercises of this type are easy to grade by hand or using the computer. Therefore, they have become a popular test type. In recent years, they have come under a lot of criticism, in part for

robbing students of the opportunity to write. However, multiple choice tests are still an attractive way to get quick information on a student's knowledge.

In order for multiple choice exercises to be effective, a number of plausible, but incorrect alternatives to every correct answer (distractors) must be created. This process is not as simple as it might seem, since the syntax of the distractors must match the correct answer.

However, neither the question nor the responses need be written text. They may be spoken text, audio, still pictures or video. Scott, Jolly and O'Brien (1989) used many such multiple choice variations in their interactive videodisc for English. In one of their exercises, students watch a short video clip, and then answer a comprehension question with four possible responses presented. In another exercise, they see a short video clip and choose from among four sentences a description of the action which occurred. The audio or video need not always be in the question, however. The answer choices could be video or audio based. For example, students might be asked to match one of several pictures to a sentence printed on the screen. Or they might be asked to match pictures to an audio-based description.

The most obvious advantage to multiple-choice questions is that the computer can easily evaluate and provide feedback on them. Only a few feedback options are necessary, and no complicated parsing mechanism is needed. In the electronic textbook, multiple choice questions will only be used in the initial stages of concept learning. For example, they will be used to check the student's understanding of explanations. (See the reading presentation on the accompanying diskette for a way of using multiple choice to check vocabulary comprehension.) In addition, as is illustrated in section 4.4.2.2, they may be used in recognition exercises.

2.4.1.1.2 Matching

An extended variation of the multiple choice exercise is the matching approach. In this task, students must match items in one list to appropriate responses in another list. When using paper-based formats, this exercise type can be rather confusing to use, because the students must indicate matches either by drawing lines between the question in one column and the answer in the other, or by writing the letter associated with the item in one column next to the number associated with its match in the other column. On the computer, however, these associations can more easily be made by dragging an item beside its match. (See the reading section in the pocket materials for an illustration of this technique.)

Matching exercises are very similar to multiple choice exercises. The difficulties they pose and their uses are similar. Matching exercises, however, allow a larger number of questions with discrete answers to be posed in one place. There are a large number of distractors available for each item. However, the student may be able to solve some of the problems using a process of elimination. This is a reason to avoid using matching-type exercises too extensively. The electronic textbook will use them in the same way it uses multiple choice--as an initial test of form recognition.

2.4.1.1.3 Scrambling

Another exercise approach ~~which is more easily performed on the computer than~~ with traditional materials is the scrambling exercise. In this approach, sentences, phrases, words or even letters which are in an incorrect order are placed into a correct one. This sort of exercise can operate on many levels. When students reconstruct words from scrambled letters, they must keep in mind the possibilities presented by the phonology and morphology of the language. When they construct sentences from individual words, they must keep in mind both syntactic constraints and the rules of discourse. And when it comes to putting sentences into a logical order, the meanings of

connecting words as well as the global meanings of the sentences must be kept in mind. Providing a picture or a videoclip can help to provide the student with an appropriate context, simplifying the task somewhat. Or, to make the task even more difficult, the lines of two different conversations or dialogues may be mixed together. See section 4.8.5 for references and examples, as well as the Scrambling demonstration on the diskette for a computer-based example.

2.4.1.1.4 Fill-in-the-Blank and Other Short Answer Types

Of all the possible exercise types found in foreign language textbooks, fill-in-the-blank and short answer exercises are probably the most commonly employed. The amount of writing the student actually does in these situations varies. Sometimes students are asked simply to fill in endings:

Мы ходил_____ в парк_____ каждый день.

Мы два час_____ гулял_____ по город_____.

(We walked in the park every day.

We strolled around town for two hours.)

Other times, students are asked to fill in full words. Sometimes cues are given to indicate the word or the form of the word to be filled in, although the choice of word is sometimes left open to the student. ~~Students have a wide range of choices when~~ completing the following exercise:

Матвей читает _____. (Matvey is reading _____.)

The accusative forms книгу 'book' and газету 'newspaper' would both be acceptable here; anything that can be read would be, even in the plural. But if such questions are constrained, as is common in traditional textbooks, they are much easier to

evaluate. There are several ways to cue short answers like these. Most simply and directly, the target language word may be given, as illustrated below. When this sort of cue is given, the exercise is purely grammatical; students must simply give a different form of the word, based on the other information provided in the sentence.

Матвей читает _____ (газета).

Another option is to give the cue word in the native language, as illustrated below:

Матвей читает _____ (newspaper).

In this case, the student's job is twofold: decide on the appropriate Russian word, then put it in the right case. Yet another option, one that is more conveniently delivered via the computer than with traditional paper-based materials, is to provide a picture as a cue instead of a word, as illustrated below.

Матвей читает _____



In the electronic textbook, short answers will only be used in the initial phases of production. (See section 4.4.2.3.) Later, they will give way to sentences.

Although they do not require students to respond with full sentences, short-answers and fill-ins do ask the student to give an answer within the context of a sentence. And when no cues are given, and the student must determine both the word to

use as well as the form, the exercise can indeed become challenging. This is the essence of the cloze exercise, which has long been used as a measure of a student's general knowledge of a language.

Some of the complaints made against multiple choice formats may be directed at short-answer styles as well. Since such exercises do not require the student to produce full sentences, some feel that this significantly lessens their usefulness. Many teachers do not allow students to fill in single words in such exercises; instead, they ask students to copy out the full sentence, including the word to be filled in. This, they feel, gives the student more experience writing full sentences. There is merit to this approach. For this reason, fill-ins in the electronic textbook will require students to type out the full sentence while filling in the blank space. This should give students a better feeling for the way sentences are constructed in Russian, even when they are not creating those sentences wholly on their own.

2.4.1.2 Full-Sentence Responses

Probably the most difficult part of learning a language is creating full sentences, either orally or in writing. Such production requires some level of mastery of vocabulary and grammar as well as confidence on the part of the student. There are many ways to elicit full sentences from students. Some of these methods, such as translation and free-response questioning, are elaborated upon in sections 4.4.2.7 and 4.4.2.8.

Many exercises which ask students to type in full sentences are not easily evaluated. An exercise which is highly constrained, which guides the student to type a particular sentence instead of writing freely, is much more easily evaluated by the computer. Dictations are the most constrained type of full-sentence exercise; while free-

responses to personal questions are the least constrained. Other exercise types fall somewhere in between.

The dictation is easily carried out in the classroom setting; the teacher reads the text aloud, and students write what they hear. However, the process is even simpler on the computer. Students can listen to a passage, and then type it into the computer. This is a particularly easy exercise for the computer to correct, since there is only one correct answer. In addition, the computer can indicate the locations of student errors and allow the student to listen again to try to write in the correct word. Dictation is a particularly important exercise for beginning learners of Russian. The rules of final devoicing of consonants, consonant voicing assimilation, and vowel reduction cause differences between orthography and pronunciation. Recognition of palatalized consonants, which are very difficult for beginning students to hear, can also be exercised through dictations.

Another type of highly constrained sentence production exercise provides a number of words, properly ordered, to the student to assemble together into a full sentence. (Note the difference between this type of exercise and the scrambling exercise illustrated in the demonstrations on the accompanying diskette. There, the emphasis is on producing meaning through the proper assembling of words; here, the emphasis is on syntactic relations and correctness of inflections.) In the example below, all the words are in their dictionary forms. The student must create a sentence by typing in the correct endings.

Игорь / каждый / утро / приходит / к / я / и / брать /
мой / газета.

(Igor / each / morning / come / to / I / and / take / my / newspaper.)

Once again, this type of exercise is easily corrected by the computer, but some variations are possible. It would be entirely correct for the student to use the plural form of newspaper, 'газеты,' in this context, and the computer must allow for such variations. The choice of tense is left to the student in this case, since the taking of the newspaper could have occurred habitually in the past, every day in the present, or, will happen every day in the future. Almost every word in the above sentence must be altered by the student, requiring strict attention to detail.

Translations also provide a relatively constrained way of eliciting full sentences from students. (See section 4.4.2.7 for a longer discussion of translations and examples.) However, variations in word choice and word order are more common than in either of the two types of exercises described above, making this sort of exercise more difficult to evaluate. While the computer is capable of such a task, given a sophisticated parser, there are other alternatives; for example, students can submit translation work directly to the instructor for evaluation, or check it themselves against pre-stored correct answers. A combination of these latter two approaches is quite reasonable, since students will be able to locate many of their own mistakes before submitting their translations to the instructor.

Free-response questions represent the most complicated type of full-sentence exercises which students may be asked to perform. Only a parser with extremely sophisticated semantic and syntactic parsing mechanisms would be capable of evaluating such work. Such a program does not exist at this time, at least not one which can reliably deal with the errors of non-native speakers of the language and which can evaluate the semantic cohesiveness of the text. Until we have such a tool, it is best to

leave the grading of such exercises to instructors. (Approaches to free-response questions are discussed further in section 4.4.2.8.)

.c4.2.4.1.3 Simulations

Simulations provide a way for students to independently experiment with the target language. Many types of simulations are possible: text-based, visual, combinations of text-based and visual approaches, simulations that involve other people and those that do not. Since all these approaches are largely based in still-developing technologies, it is not possible to predict their final form in the electronic textbook. However, they all have something to offer the language learner. Here, three kinds of simulations will be discussed: microworlds, text-based interactive environments, and virtual reality. These environments approach real communication in different ways.

2.4.1.3.1 Microworlds

One type of simulation which has been used to teach foreign languages is the microworld. In the microworld, on-screen objects can be manipulated by the sentences typed by students. The resulting changes are graphically portrayed on the screen. The result is a sort of dialogue between student and computer. Since the entire dialogue is based on the limited scope of the microworld, students have context for all the sentences they type in. A number of these microworlds will be discussed briefly here, but there are many others as well.

Winograd's SHRDLU (1972, 1973, 1979; discussed by Higgins & Johns, 1984, among others) is a simple world consists of a number of blocks of varying sizes and colors which students may manipulate in a variety of ways. The response of the computer to these moves generally consists of describing the spatial relationships between the objects. The student types sentences such as "Put the blue block on top of the red block," and the computer performs the change and responds with a sentence of

its own: "The blue block is now on top of the red block." There is no limit to the changes which the student can effect on the screen.

The MIT Project Athena (discussed by Underwood, 1987, among others) developed a microworld consisting of furniture which can be moved around a room. The student's initial task here is to clean up a room in disarray. The computer responds to the actions of the student appropriately; for example, if the student puts the desk on top of the plant, the computer complies, but protests that the plant is being killed.

Hamburger and Maney (1991) describe Movecaster, which contains many room-sized worlds, such as a bathroom, kitchen or classroom. In each microworld, students must perform certain tasks. For example, one task involves washing the hands. This task requires several different subtasks: turning on the water, picking up the soap, washing the hands, rinsing them, turning off the water, picking up the towel and drying the hands. The computer can respond to these actions not only with pictures, but with relevant comments. (One can imagine responses such as "The water is now running," "Your hands are soapy," or "Your hands are clean and wet.") The computer can guide the student through the subtasks in an appropriate sequence. For example, if students pick up the towel before washing their hands, the computer can respond with: "Before you can dry your hands, wash them in the sink with soap."

Like any exercise, simulations must contain instructions which guide and advise the student when necessary. However, since the problems which a student might encounter while using a simulation are potentially varied and unique to each individual, this makes providing assistance quite challenging. Therefore, the instructions must be extremely clear and specific. Steinberg (1991a) points out that two kinds of assistance may be necessary: help with the mechanical and technical aspects of using the simulation ("Type your commands using imperative forms," "Type *СМОТРИ* to look

around you,” “Type ПОМОЩЬ for more help.”) or guidance on how to learn from the simulation (“What can you do with soap?” “Go find someone to give the present to,” “Try talking to the old woman.”) Microworld simulations, while performed by individuals working alone, can also form the basis for discussions between students. They can share their experiences within the simulation with one other, for example, and learn of other actions they might have taken in the simulation.

2.4.1.3.2 Text-based Interactions

MUDs (Multiple User Dimensions/Dungeons) and MOOs (Multiple User Dimensions/Dungeons -- Object Oriented) are programs which were initially developed for text-based interactive computer adventure games. They integrate two environments: internet chat networks, where real people interact with one another through typed interchanges, and text-based adventure games, in which players navigate through and solve problems within a virtual world by typing in commands. By putting these two environments together, people can navigate through these virtual worlds and have contact with real people who are logged in to the same network. They can “manipulate” the “objects” found in this world, with commands such as “Pick up the book” or “Read the book,” and the computer will respond with sentences like “You now hold the book” or “The book is entitled ‘Fun with Computers’.”

Recently, this type of environment has become popular as a medium for communicative practice, as evidenced by the existence of sites like SchMOOze University for English as a Second Language (arthur.rutgers.edu, port 8888), SvenskMUD for Swedish (svmud.lysator.liu.se, port 2043), Daedulus FrenchMOO (logos.daedulus.com 8888), and MundoHispano for Spanish (europa.syr.edu 8888). Currently, some teachers have their students log on to one of these sites all at the same time to practice with each other and even with people from other parts of the world.

MOOs and MUDs lack the visual element boasted by microworlds, but they have the advantage of allowing users to communicate with each other in the target language. They can ask each other for advice, interact with each other using the objects found in the world (such as swords or other weapons in battle-oriented environments, or books and other objects in other world types), or just chat. Players can even assume different personalities than their own in such environments. This anonymity may help shyer students to communicate more than they would in a face-to-face environment. In addition, the other users of the system need not be limited to those in the same class. Users from all over the world, including native speakers of the target language, may log on to the system and interact with the beginners, a practice which SchMOOze University encourages.

One can envision incorporating graphics or voice transmission into such environments. Such innovations would change the character of these worlds in certain ways; whether these changes would ultimately be positive or negative for language teaching and learning cannot be determined at this point. However, it is clear that a number of variations on this theme will be implemented in the years to come, and their use in language learning and the electronic textbook will be examined.

2.4.1.3.3 Virtual Reality

The simulations described above use graphics or text to paint worlds and situations, and ask the student to interact with those worlds using the typed word. Possibilities for expanding these worlds with the spoken word are coming closer to reality with the advances being made in the fields of virtual reality and voice recognition.

Virtual reality can bring the physical element to these worlds. To interact with a virtual world, users wear special glasses to become entirely immersed in the world. They interact with the world physically. That is, to pick up an object, they reach out and

grasp it. To move the object, they move the hand “holding” the object. Rose and Billingham (1995) describe a program called Zengo Sayu for learning Japanese. In this world, which bears a certain resemblance to SHRDLU, the user manipulates colors and boxes with a wand. When the user completes an action, the computer reacts appropriately. If the user touches the color blue, the program says the word ‘blue’. If the user brings the color blue to a transparent box, the box turns blue, and the program says ‘blue box.’ Later, the student may manipulate the boxes in relation to each other, responding to commands given by the program (“Place the blue box next to the white box.”) The program also incorporates voice recognition; the student can also perform actions by way of speech. Zengo Sayu is a precursor to the more sophisticated exercises which may be possible in a few years. As the technology advances, more complicated worlds with more objects will be possible. The technology for interacting with such environments will also improve.

To conclude this discussion of simulations, it is clear that a microworld or MOO/MUD environment can currently be used in foreign language education, and such approaches will be incorporated into the electronic textbook. But combinations of these approaches and virtual reality applications are not yet perfected. Thus, they are not currently envisioned as part of the electronic textbook, although they may become part of it later.

2.4.2 Repeating Items

The computer has one distinct advantage over traditional materials when it comes to repeating exercise items. Computers can present materials many times as needed, in random orders and combinations, in order to give the student more practice. The question is how to decide which items should be repeated. For example, should items which students have answered correctly be eliminated from the working pool entirely, or

should they be left in? Should specific items which a student has answered incorrectly be presented again, or should a similar item be given instead? There are different schools of thought on this issue, and the debate can become quite heated.

One school of thought says that it is not necessary to remove known items from the working pool. The idea here is that students like to get “freebies”--a good score for relatively little effort. Klier (1987) notes that people like to get something for nothing, as when a Monopoly player receives \$200 just for passing “GO.” Klier also suggests that if students know that the items they answer incorrectly will not be presented to them again, they will pay less attention to the feedback they receive on those items. However, if they know that the question is likely to appear again, they may be more likely to try to retain all the information they can.

The other school of thought says that items should be removed from the active exercise pool once the student answers them correctly. Phillips (1987) feels that items which the student answers correctly the first time should not be presented again. The claim is that students become angry that the computer does not “believe” that they know the answer. They may also worry that there is a bug in the program which causes the computer to repeat items unnecessarily.

Both of these approaches make assumptions about learner style. The first assumes that students simply want to get the work done and get a good grade. The second implies that students are interested in doing well and learning, as well as making sure that the instructor (or computer) is informed of that progress. The truth is that students fall along a continuum between these two positions. The real question is, which approach actually helps students learn more?

Atkinson’s (1976) working pool approach to vocabulary learning addresses these problems. In this approach, discussed in greater detail in section 2.5.5.1 below,

an item is deleted from the working pool if the student answers it correctly the first time. Other words are exercised until the student masters them. Then, if necessary, the word is moved into a review pool and is occasionally presented to the student. Atkinson's research showed that this approach, in conjunction with weighing the items for relative difficulty, resulted in better vocabulary learning for students. Although these results cannot automatically be extended to other aspects of second language learning, they suggest that such algorithms can be used to optimize the learning process.

When the focus of an exercise is on vocabulary, each item must be considered individually. That is, either a student knows a particular item, or does not. However, when grammatical forms are being tested, it need not be the same item that is repeated. Instead, a parallel item may be presented. For example, if a student fails to produce *книгу* the accusative singular form of the feminine noun *книга* 'book', the same word need not be presented again. Instead, another feminine noun in the accusative case could be elicited, such as *газету* 'newspaper.' However, Robinson et al (1985) found that when recycling missed items, it is more beneficial to repeat identical missed items at random intervals rather than repeating the identical or a parallel item immediately or repeating the identical item at the end of the exercise. This approach has the additional advantage of being easier to implement on the computer.

2.4.3 Realism of Exercises

One common complaint which has traditionally been lodged against non-communicative language teaching is that even though students appear to have control over the structures of the language on tests, they are incapable of using them in natural language situations. One reason for this lack of transfer may involve the fact that the tasks which students are asked to perform are not natural enough to carry over to real-life situations. Braun and Mulford (1987) suggest, for example, that verb drills which

mix tenses outside of a meaningful context actually creates errors which are “artifacts of an unrealistic drill environment” (p. 150). That is, except in extremely specialized contexts, it is not natural to produce a past tense, then a future tense, then an imperative form. Therefore, students not be asked to perform such a task unless such a context is provided. Experiments are needed to confirm the correctness of this theory, and the electronic textbook could be used to run such studies.

In general, the more realistic the exercise, the more useful it is to the students in the long run. Not every exercise need be extremely realistic, but realism should be pursued as often as possible. Realism may have an extra added benefit in student motivation. Winn (1993) suggests that if learning is anchored in a real event that is interesting to students, such as a favorite movie or a fun activity, it proves the usefulness of learning that skill to the student. Similarly, if students can be made to see the usefulness of a particular construction in conversations relevant to their own lives, they may pick up that bit of grammar more quickly.

2.5 Evaluation and Review

Perhaps more important than the types of exercises contained in a textbook is the way the computer evaluates those exercises and how this evaluation affects future learning directions. Learners must receive clear, correct and specific feedback on their performance. If the feedback does not have these qualities, it will serve no purpose, because students will not pay attention to it. Therefore, different types of feedback appropriate to various tastes and situations must be provided by the electronic textbook. Various methods of checking student answers, such as keyword matching algorithms or parsers to evaluate sentence-long student answers, must be considered.

Although the computer will evaluate much of the student’s production, it is important that the student not regard the computer as an infallible, all-knowing speaker

of Russian. Rather, the computer should be seen as a useful tool which guides learning and helps students become more independent learners. One way to do this is to provide students with feedback which helps them to apply what they know to the problems they encounter. In addition, algorithms which calculate the current state of a particular student's knowledge and determine whether a student needs additional review must be implemented. Finally, information about student progress must be reported to instructors, so that they can fulfill their aid and evaluation responsibilities.

2.5.1 Success of Feedback

As Steinberg (1991b) points out, "It is one thing to determine that a student has made an error; it is quite another to determine the underlying causes of that error." A student's single response--whether right or wrong--cannot by itself inform an instructor or computer about that student's level of knowledge. Consequently, feedback may allow the student to correct one particular response, but may not affect the reasons why that response was given. It is difficult for human instructors to pinpoint the problems of a particular student. For the computer, which does not have the advantage of negotiated meaning in conversation, the challenge is even greater.

It is generally agreed that good feedback consists of more than simple statements of "Yes, that's correct" and "No, that's wrong." Good feedback clearly explains why some answers are correct, and why others are incorrect. This entails a large amount of work by those who design the materials. Designers must predict the incorrect answers which students are likely to give and provide corrective feedback for those answers. This sort of feedback usually assumes that the student's response--whether it contains an error or is a correct answer--was the response the student intended to give, and not a typographical error (although this is indeed the cause of many incorrect responses).

Unfortunately, not all incorrect responses can be predicted. When the computer encounters a non-anticipated response, it must give feedback which helps the student get back on the right track. Sometimes students do not give any answer at all to an exercise question. This, too, requires feedback from the computer. Smith and Boyce (1984) suggest that, in such cases, the computer should restate the question or provide help if students do not enter an answer in a set period of time. If student errors are tracked over a period of time, and that information is stored and analyzed, such errors can be more effectively predicted and addressed. In section 2.5.5, such methods of modeling student knowledge will be discussed.

Even when items are presented in a multiple-choice format, feedback need not be limited to simple right/wrong evaluation. Good feedback does a number of things. It lets students know whether their answers are right or wrong, and helps them to understand why this is so. It provides them with the opportunity to improve their understanding of the materials. Also, good feedback is given as quickly as possible.

Feedback is important to students because it lets them know where they stand in their learning. Scott, Jolly and O'Brien (1989) surveyed students using their interactive videodisc system for communicative learning of English, and found that almost 90% of the 158 students surveyed wanted the computer to tell them about their progress.

Often, incorrect answers indicate that the student either does not yet fully understand the concept being exercised, or is still clumsy in the execution of that knowledge. However, there are other reasons for incorrect answers. Sometimes students merely slip up--they may actually be very proficient in using the concepts being exercised, but they make mistakes of inattentiveness. Such errors are more noticeable with computer-based exercises than paper and pencil type exercises, because the computer catches even the most minor of spelling errors which might be (accidentally or

intentionally) overlooked by human graders. It is important that the electronic textbook make some effort at distinguishing these “accidental errors” from the ones which truly indicate a lack of understanding. The way to do this is by tracking the student’s response history to particular types of problems. If students make the same mistakes regularly, this may mean that they hold misconceptions which are causing those mistakes. Again, this type of student modeling will be discussed in section 2.5.5.

When a student responds incorrectly to an item in the instruction, several approaches can be taken. The student can be asked to repeat the same item again immediately, repeat the same item later, do a similar (or parallel) item immediately or do a similar item later. Robinson et al. (1985) found that when recycling missed items, it is more beneficial to repeat identical missed items at random intervals rather than repeating the identical or a parallel item immediately or repeating the identical item at the end of the exercise. If this is true, then items which the student answers incorrectly need to be reintroduced randomly into the exercise.

Timing is an important consideration of providing feedback. One of the strongest arguments which has been made for computer-assisted learning over the years is that it can give feedback immediately. But exactly when should feedback be given? One option is to give it at the end of a problem set, just as in a test. Another is to give it after the student has had several opportunities to give the correct answer to a problem. But the most commonly pursued option gives feedback to every response the student makes, giving the student the opportunity to use that information to produce the correct answer.

This approach necessitates giving students more than one try on each problem. Just how many tries should be allowed is a difficult question. Some software allows students a fixed number of tries; two or three attempts may be allowed before the correct

answer is automatically provided, for example. Some feel that this approach keeps students from getting stuck on one question for too long a time and eventually getting frustrated with the exercise. But other educators feel that such limits are unnecessary. They assert that students should be allowed unlimited attempts to get the right answer, and that they will give up when they have had enough. It seems clear that both types of students exist--those who will give up at the first opportunity, and those who will keep guessing until they give a correct answer or run out of time.

It remains unclear at this time whether one approach is clearly superior to the other. It might be that some exercises are more conducive to one approach than to the other. Again, this is an area in which the electronic textbook could be used to conduct research. Students could be observed electronically to determine how many guesses they make before either giving a correct answer or giving up. Then the number of guesses could be limited, and the students observed again to determine whether these limitations have an overall effect on their progress through the materials.

Feedback which is useful for one student may not be useful for others. Thus, a variety of types of feedback must be available (Fox, 1990) and students allowed to choose which feedback they want to see (Robinson et al., 1985). A program for drilling Russian verbs using such an approach is discussed in Frumkes, 1994. Robinson et al. also stress that students should not be left without guidance when choosing feedback. That is, the program should make available only the help appropriate to the particular problem, and not overwhelm the student with irrelevant choices. If a student is struggling with correct case endings in a particular exercise set, for example, only information about case usage and endings should be made available, while other information (e.g., about verb conjugation) should be suppressed.

Certain guidelines for providing feedback were outlined by Robinson et al. as a result of their research with first-year Spanish students. Their findings show that indicating the location of errors and providing hints about how to correct them is more valuable than either error location or hints by themselves. However, some students prefer to receive less information about their responses. Some just want to know that their answer is incorrect and try to locate the error on their own. Others only want to know the location of the error, and try to discover the nature of the error on their own. These various learning preferences should be accommodated. It may also be that students may pay more attention to the feedback when they are given a choice regarding which feedback they see. After all, feedback does no good at all if the student is not paying attention to it. Allowing students to control the scope of feedback gives them control which may aid their learning.

Many types of feedback are possible: suggestions or questions leading to correct answers, clues based on the grammar, examples of similar forms, or overt correction, whether implicit or explicit. Robinson et al. suggest that within a communicative context, implicit correction is more successful than explicit correction. One way of making feedback implicit is to put it in question format, which helps students realize the irrelevancy or incorrectness of their responses (Steinberg, 1991b). That is, implicit correction of the type:

Program: What did he do?

Student: He waked up.

Program: Who did you say woke up?

Student: ... (Robinson et al., 1985, p. 39.)

is more successful than explicit correction like the following:

Program: What did he do?

Student: He waked up.

Program: No. He woke up. Try again. (Robinson et al., p. 39.)

Ohlsson and Rees (1988, cited in Ohlsson, 1991) suggest a hypothesis that implies that feedback should “refer to *the state of the problem*, rather than to the performance of the learner” on that problem. As an example, let us assume a student has used an imperfective verb in an environment where a perfective verb would have been more appropriate. The feedback to such an error should describe what the sentence should look like (“The perfective aspect is needed here,”) not what it actually looks like (“You used the imperfective verb.) The aspectual verb pair could be also be made available to help learners understand what their choices are. Another possible advantage of this approach is that providing feedback in terms of the shape of the problem instead of the state of the response is less confrontational. Instead of pointing out the student’s shortcomings, it stresses the correct structures of the language. The electronic textbook could be used to conduct experiments regarding the correctness of this hypothesis.

Finally, it must be admitted that students occasionally produce incorrect answers because of deficiencies in the materials themselves. That is, sometimes incorrect answers suggest not student shortcomings, but bad instruction. Steinberg (1991a) reports that some authors of computer-based educational materials revise either the instruction or the questions if 40% of students answer a particular item incorrectly. Thus, the answers given by students may be used as part of formative evaluation (Eley & Farrington, 1994). That is, the students’ actual answers, the time it took them to reach those answers, and the feedback the computer gave to those answers can be used not only to give feedback to learners, but also to create better versions of the software. The advantage of the electronic textbook is that student answers can be continually

tracked in the way Steinberg suggests, and improvements made to the materials where necessary.

Therefore, good feedback can help students locate and correct their errors. The electronic textbook must provide students both with appropriate feedback and with the freedom to use it as they find appropriate. The electronic textbook will provide feedback along the lines described above, and will also be used to test theories about the utility of various types of feedback.

2.5.2 Locus of Control

One of the great hopes for computer-based education was that it would allow students to exert greater control over the pace, content and sequencing of their studies. Many felt that individual students, not the textbook, teacher, audio tape, or computer, know best how to approach the materials given their unique strengths. It was hoped that such control would help learners better understand the concepts presented.

Laurillard (1984) suggests that students be allowed to take any path they choose through educational materials. This, she claims, creates greater learning possibilities than if students are limited to paths which the computer or teacher has prescribed. Her position is that there must be sound pedagogical reasons for restricting the freedom of students in any way. ~~Since there is little compelling experimental evidence that they~~ should not be allowed such control, she reasons, students should be given the benefit of the doubt and therefore full control over the sequencing of materials. While such freedom may be appropriate for smaller learning units with intrinsic logical ordering, such as the isolated video programs described by Laurillard, we cannot allow such freedom in a textbook being used by an entire class. After all, in order to be able to communicate effectively with each other in the classroom environment, all members of the class must keep to a relatively similar pace.

On the other side of the argument concerning student control, Steinberg (1991b) claims that students learn less when they order the sequence of instruction themselves. Her position is that students may not always be the best judges of how to proceed in their learning. "Learner control is not appropriate for all students for all courseware. Not all students are capable of, or even interested in, managing their own learning." (p. 66) Sometimes even just the number of learning alternatives can overwhelm students to the extent that they accomplish little. Merely providing learners with a wide range of learning options is not enough if they cannot manage them successfully (Barnett, 1993). Not surprisingly, good students tend to manage their learning better than poor ones. But even the best students may not be skilled enough language learners to be able to determine appropriate sequences of presentation.

Whether it is due to laziness, a lack of awareness, or a combination of both, Steinberg has found that many students are not successful in managing the speed or difficulty level of their work. She notes that students who are allowed to control the speed of their computer-based learning fail to manage their time adequately. In general, they do not complete lessons on a regular basis (doing them all at once instead of spreading them out over several days) and do not allow adequate time for review. They may not understand the purpose of completing lessons regularly or the importance of review during the learning process. Steinberg goes on to claim that learners do not choose appropriate levels for their skills when they are allowed to choose a difficulty level. That is, they tend to avoid areas which they find difficult or emphasize areas which are easier for them. As a result, they remain weak in their trouble areas and gain strength where they were already competent.

Since students cannot always be expected to adequately control their learning, perhaps this responsibility be turned over to the computer. However, there are

drawbacks to this approach as well. First, many people dislike being ordered around by machines. Second, the machine cannot always correctly diagnose student difficulties. Human instructors also occasionally suffer from this problem, but there is a large difference: human teachers and their students can have a conversation to clear up misunderstandings. The computer, however, is largely incapable of negotiating, resulting in frustration for the learner. Students begin to make complaints such as “It keeps telling me I have the wrong answer, but I know my answer is right!” and “Why does it keep giving me this same question over and over again?” This sort of frustration can drive students away from using computer-based materials entirely. Finally, if the computer is in total control, students no longer have responsibility for their learning, which may result in a lack of motivation. Thus, there are many reasons why the machine cannot be allowed to exercise absolute control over student learning.

Neither is it feasible for the teacher to be in control of every aspect of learning. Certainly it is the instructor’s duty to monitor student progress, but the teacher cannot be expected to immediately evaluate every student’s answer to every question posed by the computer. It is the computer’s role to act as learning collaborator on a daily basis (Self 1988, cited in Cumming & Self, 1991), not the teacher’s. If learners are encouraged to see the computer as a collaborator, instead as an omniscient super-instructor, they may come to expect different things from it. Cumming and Self suggest that students may expect infallibility from the system unless it is specifically pointed out to them that the computer is merely an advisor. When they hold such unrealistically high expectations about the computer’s capabilities, they may become very upset when the computer does not adequately respond to their needs. It is curious that they have this expectation of computers, when they know that human teachers are fallible. If students come to see the computer as a helpful tool, instead of some sort of oracle, they will be

encouraged to take more responsibility for their learning. This, in turn, reduces the pressure placed on both computer and instructor.

Thus, the computer should guide students, yet neither control or ignore them. It must help them become independent, self-sufficient learners who bear responsibility for their own learning and the skills they acquire. It should require them to work up to a certain level of competency before they are allowed to proceed on to different materials. It should track their progress and point them in appropriate directions (Barnett 1993). The system should provide learners with several paths along which they may proceed, so that they can always find alternate learning routes as needed (Cumming & Self, 1991). For example, when review is necessary, the computer should be able to suggest a variety of activities. In addition, the computer can introduce new, related concepts once basic ideas are understood. Students should be free to pursue the suggested materials as they wish. Laurillard suggests that if students are forced to regularly make decisions about how to proceed, they will stay involved in their learning and not be passive learners. This is the sort of freedom which creates independent, self-motivated learners.

2.5.3 Applying Knowledge

It is not always a lack of ~~knowledge or motivation which~~ causes students to fail in performing a task. Sometimes, students do not apply knowledge because they do not know that it is appropriate to the activity before them. Therefore, students need to be made aware and constantly reminded of the learning strategies at their disposal (Steinberg, 1991b; Barnett, 1993).

Without periodic reminders of the problem-solving strategies available to them, students can easily become frustrated and wonder why the computer keeps presenting them with problems which they cannot solve. After all, students cannot apply learning

strategies which they have forgotten. For example, when faced with an unknown word, students can be reminded of decoding strategies (such as examining the stem of the word or the surrounding context) as an alternative to using a dictionary. Sometimes problem-solving strategies need to be clarified for students who have forgotten them; such review should be readily available when needed. However, students must eventually be weaned from such assistance and learn to function independently. After all, one aspect of functioning independently is knowing when and how to use problem-solving strategies, not just applying them when told to do so. Learners should be encouraged to use a variety of strategies so that they do not become so attached to one that they ignore the potential usefulness of others (Laurillard, 1984).

Students must also understand the utility of such strategies, since if they do not perceive that a given strategy is useful, they may ignore the strategy--or worse, the entire activity--entirely (Elton and Hodgson, 1976, cited in Laurillard, 1984). Thus, they must practice using the strategies in realistic environments to understand their importance. In a game-like learning-drill environment called "West" (Burton & Brown, 1982, cited in Steinberg, 1991b) the program isolated weaknesses which students demonstrated in using particular skills. The authors were very concerned with making students amenable to using the advice the program gave them. Therefore, their system provided advice very judiciously. That is, advice was given only immediately after the student had demonstrated a weakness with a particular skill, and at no other time. This helped students to appreciate the value of the information being provided. Students were encouraged to immediately use the advice and try the problem again if they so desired. However, they were not forced to follow the advice. Several strengths to this approach are evident. Since students are encouraged to immediately incorporate the advice given by the computer, its value is immediately proved. Once students perceive

the utility of the advice they receive, they are likely to be more receptive to it in the future. In addition, students can decide whether to use the advice or not, allowing them to retain control of the learning environment.

2.5.4 Determining Student's Level of Knowledge

If the computer-assisted language learning and the electronic textbook in particular are to live up to their promise to provide individualized language learning, the computer must have some way of tracking student achievement and progress. At one level, the program must be able to determine when a student has practiced with a particular concept long enough to be allowed to move on to other topics. At another level, the computer must determine the reasons why students make the particular mistakes they do. That is, it must model the student's knowledge in such a way that allows for predictions about why the student makes particular errors and then provide advice based on those predictions.

2.5.4.1 Sufficient Success

The electronic textbook holds the potential for reducing the time students spend on a task by monitoring correct answers given and letting the student quit once a certain level of mastery has been achieved. Several methods for establishing this level have been suggested, and some have been tested, but again, due to the small amount of empirical data in this area, the electronic textbook would be invaluable as an arena for further testing of these theories. Some of these success criteria are explored in detail below.

Steinberg (1991a, 1991b) suggests that mastery may be demonstrated by a student by either making a certain number of correct responses in a row, or by reaching a certain number of correct answers in an exercise. For example, if students gave five correct answers in succession, the computer would assume they had mastered the

material. Given this evaluation measure, a student could answer the first five items in an exercise incorrectly and then answer the next five correctly, and the computer would still assume mastery of the topic. Note, however, that the overall percentage of correct answers here is 50% on ten problems. If a student were to answer five problems incorrectly, then four correctly, and the next one incorrectly (due to a lapse in attention, for example), then five items would have to be answered correctly to show mastery, for a total correctness rate of 60% on 15 problems.

A higher rate of correctness over fewer items may be achieved by using percentages from the outset. For example, a student may be required to answer 70% of the items correctly to demonstrate mastery. Thus, if a student answers seven of ten problems correctly, mastery has been demonstrated. If the student initially answers only five of ten items correctly, then an additional ten problems must be answered correctly to push the percentage to 71%, requiring the student to answer seven problems in a row correctly over a set of 17 problems. Requiring this higher percentage of correct answers means students have to answer a greater number of problems correctly in succession.

However, both of these two mastery criteria would be complicated by the random reintroduction of missed items into the working pool. As discussed above, this is something which should be part of good computer-assisted language learning. Repeated items may carry the same weight as items correctly answered on the first try; that is, if a student answers an item incorrectly the first time, but gets it right when it is reintroduced later, one point is added to the total of correct answers, although the total number of tries on that problem is still two. A higher percentage of correct answers may be required here (75%) since items are being repeated. This approach may be implemented by keeping the working pool small--five to nine items, as suggested by Atkinson (1976) and discussed in section 2.4.2. Incorrectly answered items may be

placed back in this pool, and only once the entire working pool is exhausted will the student's success be evaluated, so that students must eventually answer every item in the working pool correctly.

Let us assume that the initial pool consists of seven items. If a student answers five of the seven items correctly on the first try, and the remaining two correctly on the second try, nine problems have been performed and seven correct answers have been given, putting the student's success percentage at 78%, well over the mastery mark of 75%. If the student falls short on this measure (answered less than 75% correct), additional items (five) may be introduced into the working pool. Let us assume then, that a given student answers four of the seven items in the working pool correctly on the first try, and the remaining three correctly on the second try, adding up to a 70% success rate. In this case, an additional five items would be placed in the working pool, and the student would have to answer at least four of those items correctly on the first try to demonstrate mastery. If mastery is not achieved after a certain number of problems (twenty-two, for example) the instructor could be alerted to the difficulties the student is experiencing, and personal attention could be given. In addition, the system could then "plan" to provide an intensive review of the difficult material once the student has had an opportunity to discuss it with the instructor.

Alternatively, the number or percentage of incorrect answers might be used to evaluate a student's success and to determine whether review or advancement is in order. Thus, several algorithms for assessing mastery are possible to implement. The electronic textbook will be a testing ground for these methods.

2.5.4.2 Modeling Student Knowledge

In order to give the most helpful feedback possible, the computer must take into account what the student already knows, as well as the areas where the student is still

struggling. If such information is not considered, the feedback given by the computer may fail to address the particular problem the student is experiencing and not be useful.

Klein (1986, cited in Laurillard) notes the difficulties involved in providing feedback when the student's existing mental representations of the target language rules are not taken into account. Let us examine an example of feedback which is not sensitive to a student's response history. For example, a student might produce the following:

Я вчера покупал эту газету.

'I bought (=was in the process of buying) that newspaper yesterday.'

A non-explicit response to this statement might be:

Какую газету вы вчера **купили**? (with stress on the verb)

'Which paper did you **buy** (completed action) yesterday?'

The intent of this feedback, to the trained eye, is to point out to the student that **КУПИТЬ** is the perfective of **ПОКУПАТЬ**, and that the perfective is necessary in this context. The feedback assumes that the student knows how to use aspect, and either forgot that **КУПИТЬ** was the perfective verb or simply did not remember to use the perfective. However, it is possible that the student is still unclear about how to use aspect, in which case this feedback is not terribly useful. Or, it might be that the student thinks that **ПОКУПАТЬ** is the perfective verb, which is logical, since the prefix **ПО-** most often denotes perfectivity. Some students may be so certain that **ПОКУПАТЬ** is the perfective, in fact, that they will not even take note of the use of **КУПИТЬ** in the feedback. Or a student might have made the error through a lack of attention, and really does know that **КУПИТЬ** is the perfective verb and that the perfective should be used in this case. At any rate, this one error does not, by itself, tell us much about the problem the student is experiencing. In order to predict the origin of this error and give

appropriate feedback, we must know how this particular student has previously responded to similar questions.

There are two lessons here. First, we cannot assume too much about the student's knowledge from one isolated response. A student's responses must be tracked over time in order to ensure that the feedback given to errors is correct. Good teachers instinctively recall the prior performance of a particular student and use that knowledge to help on other occasions. However, this is not so easy for the computer to do, because it requires a complicated system which can model each individual student's knowledge, a model that a good teacher instinctively creates and uses. The second lesson is that while implicit feedback may appear to be successful in the short term (for correcting one error), it may not address the underlying problem which persists. Thus, feedback must be carefully constructed to strike to the heart of student difficulties, taking the student's history into account, much as a human teacher endeavors to do.

Many systems that model student knowledge assume that the errors they are tracking are stable, when in fact they often are not. Stable errors, or errors which students make regularly, are generally due to mistaken notions and rules held as correct by the learner. But non-stable errors may be attributed to other factors, such as attentional lapses, guessing, and typing errors. Stable and non-stable errors should be treated differently, since correcting a non-stable error as if it were a stable one is not productive. If student responses are tracked over an extended period of time, true stable errors (known as mal-rules) can be distinguished from non-stable, random errors. That is, a student may fail on one occasion to use the accusative case in direct object position. This does not necessarily mean that the student does not know how to use the accusative case properly. If the student has a history of using the form correctly, this error is probably random, and does not indicate that a review is necessary. However, if the

student fails to properly use the accusative case in several similar cases over a period of time, the computer should provide feedback accordingly and suggest a review if the difficulty is not remedied by that feedback. Therefore, better feedback is possible when student input is tracked over time.

This approach to the modeling of student knowledge necessitates the coding of the elements which are tested by a given item. That is, when a student succeeds or fails in giving an answer, it is not only the fact that the student gave a correct or incorrect answer which is important. The computer must also record the nature of the error or correct response. Each of these elements of the Russian might be assigned a code; for example, "FemAcSg" might be the code for feminine accusative singular. Every time the student uses a noun correctly in the feminine accusative singular, one point would be added to this variable. Every time the student uses it incorrectly, however, one point would be taken away. If this variable were to reach a certain negative value (say, -5), indicating that the student has failed to use it correctly on at least five occasions, the computer would suggest a review of the concept.

Let us examine in more detail how this might work. The computer might show Masha reading a book and ask the question: "Что делает Маша?" ('What is Masha doing?'). If the student answers correctly with "Она читает книгу" ('She is reading a book'), the computer may make several tentative assumptions about the student's knowledge. First of all, the student probably knows the meaning of the words used in the question and the answer, or was at least able to predict their meanings from context. Second, the student can properly substitute a pronoun for a proper noun (by using она 'she' in the answer instead of Маша 'Masha'). Third, the student knows the third person singular form of the verb ЧИТАТЬ 'to read'. (It may also be true that the student knows the entire present tense conjugation of that particular verb, or how to

conjugate other verbs of this type, but this cannot be predicted from this particular answer.) Fourth, the student knows the accusative form of the noun *книга*; again, this may imply that the student can properly decline other feminine nouns in *-а*, but this is not obvious from this answer. Finally, since the new information is at the end of the sentence, the student may also understand rules about word order in Russian. The student would be given one point of credit for each of these five criteria.

If, on the other hand, the student gave the answer “*Маша делает читать книгу*”, the computer could assume that one of several things were wrong. The student may have assumed that *делает* serves as a progressive marker in Russian, for example. The student may not know that *читать* can be conjugated, or what the conjugated forms might look like. At any rate, the computer must take note of an incorrect conjugation of a verb, subtract one point from the variable which tracks the conjugation of *-ать* type verbs in the present tense, and provide appropriate feedback to the student. The student would not get credit for knowing how to replace a proper noun with a pronoun. However, this single response does not prove that the student does not know how to make this substitution, so no points would be added to or subtracted from that variable. At the same time, the student does get credit for understanding the other structures in the sentence—vocabulary, accusative case use and word order, and the student would get points in those areas. An example of this type of error tracking can be found in the pocket materials, in the “Sentences” demonstration.

No matter how carefully we structure it, mistakes will occasionally occur in the modeling of a student’s knowledge. Sometimes students appear to have knowledge which they do not have. For example, they may use a form correctly because they have memorized it. However, they might be incapable of using that particular form in a different context, because for them, it is a discrete piece of rote memorized

information. Another problem for the modeling system arises when the underlying causes of student difficulties do not lie in the predicted areas, or the student is using an approach which the computer was not programmed to “expect”.

However, just because the computer may make errors in the modeling of student knowledge does not suggest that this approach be discarded altogether. Human teachers, too, make mistakes when they try to diagnose the causes of student difficulties. It is unreasonable to expect the computer to be infallible in this arena. Given this understanding, the model of student knowledge alone must not be allowed to be the sole determiner of which materials students use or what sort of feedback they see. Students must be allowed a certain degree of control over their learning. There are indeed times when the computer will misdiagnose a student’s difficulties, and the student should be allowed to override the computer’s recommendations when appropriate. Instructors should enjoy the same privilege, and this appropriately places instructors in the position of learning advisor. For example, the computer may determine that a student needs review of a particular topic based on the knowledge model, and informs both the instructor and the student of this. The student may choose not to use the review materials. But the instructor could decide that the review materials would be of use to the student, given the student’s work in class, and direct the student to use the materials.

Thus, this implementation of student modeling tracks student difficulties in order to give students better feedback. It can also be used to determine when a detailed review is necessary. It also keeps both students and their instructors informed of progress and allows instructors to intervene when necessary.

2.5.5 Evaluating Full-Sentence Responses

As discussed earlier, the processing of full-length sentences by the computer is something much desired by those who teach with computers. Availability of full-sentence processing means that more input can be evaluated by the computer instead of by human instructors. The tools to process such input are gradually being created by computational linguists around the world. Two main paths have been taken: keyword recognition, in which the computer matches the words in the answer with pre-stored target words, and parsing approaches, in which sentences are broken down syntactically and evaluated from there. Each approach has its strengths and weaknesses, but parser-based systems seem to present better possibilities, as will be discussed below.

2.5.5.1 Keyword Recognition

Several existing computer-assisted language learning programs, such as the ones discussed by Chan and Liu (1992) and Ahmad, Corbett, Rogers & Sussex (1986) use keyword matching approaches. These programs search the student's input for specific words which should be present. This potentially makes it a good system for testing reading or listening comprehension, because it allows for a number of different answers. For example, upon hearing or reading a question such as Кто приготовил обед в четверг? 'Who made dinner on Thursday?' a student might answer correctly in any of the following ways: "Миша приготовил обед в четверг," "Обед приготовил Миша" or simply "Миша". Keyword searching allows all three of these answers to be correct, simply by searching for the name Миша. The system described by Ahmad et al. even allows for incorrectly spelled answers, so the student could answer "Миша" and the computer could respond with feedback of the type "Yes, Миша made dinner, but note the spelling." This indicates to the student that the spirit of the answer was correct, and that only the spelling was a problem.

However, if such errors are to be allowed, care must be taken that truly incorrect answers are not allowed. For example, the answer *Маша*, although it differs from the name *Миша* by only one letter, should not be allowed as a misspelling, since it is a different name. One way of dealing with this particular case would be to require that the student's answer match the first two characters (*М* and *и*) exactly, while allowing either (but not both) of the last two letters (*ш* or *а*) to be incorrect. Decisions about which misspellings are allowed would have to be made by lesson designers on a case by case basis, making this sort of matching cumbersome to implement. For instance, in the example above, should *Мишу* be admitted as the answer, even though it is in the wrong case (the accusative instead of the nominative). In such a case, the computer could accept the answer as correct for semantic reasons, but give feedback such as "Yes, it was Misha, but since he is the subject of the sentence, his name should be in the nominative case and spelled *Миша*."

Another potential problem with the keyword matching system is that negatives cannot be accounted for in a straightforward manner. That is, in the case of the question: *Кто хорошо готовит?* ('Who cooks well?') a student might answer "*Маша не любит готовить, а Миша очень хорошо готовит.*" ('Masha doesn't like to cook, but Misha cooks very well.') This may indeed be the correct answer (perhaps even taken straight from a reading text!), but the matching algorithm, unless extremely well designed, will assume that the student thinks *Маша* cooks well, when in fact it the student said that it was *Миша* who cooked well. Therefore, a way of determining the location and meaning of negatives would have to be implemented.

It is clear that keyword matching algorithms, while they may be relatively easy to implement in their simplest form, may not be the best way to evaluate answers, even if it

is just for semantic content. They have another drawback, as well--they cannot easily be used to identify incorrect morphological and syntactic content. This sort of detailed evaluation requires a parser.

2.5.5.2 Parsers

In order to make keyword evaluations successful in accurately evaluating answers such as the one given above, a parser of some kind is necessary. Parsers break sentences down into their component parts. They can be structured to identify semantic, syntactic and morphological errors, allowing the computer to give feedback on these difficulties.

Parsers are the engines which made text-based adventure style games and, more recently, MOOs and MUDs (see section 2.4.1.3.2) possible. They allow the user to type in natural language, which the computer then breaks down into its syntactic parts. The relevant parts of the student's input are fed to the game program as commands. For example, a user might type, "put the book in the bag." But all the program needs is the verb "put," the object "book," the preposition "in" and the object of the preposition "bag". The parser's dictionary contains the verb "put" which has as part of its entry a syntactic frame which requires an object and a preposition such as "in" or "on." If the parser cannot find one of these elements (for example, if the sentence was "put the book"), it must return a message asking for more information, such as "Where do you want to put the book?". Similarly, the parser's lexicon has an entry for the word "in" which indicates that it requires an object. Thus, if the sentence was "put the book in," the computer would return a message such as "Put the book into what?". Either way, the student can be cued to input the needed information.

An increasing amount of work with parsers which evaluate the input of non-native speakers has been conducted in the past few years (Hagen, 1994/1995; Holland,

1994, Yazdani, 1991; Catt and Hirst, 1990; Mulford, 1989 to name a few). Many of these programs are still in the development stage, thus are not yet widely implemented in working software. Both Holland and Pusack (1983) point out that many of these parsers require that the input be constrained in some way. Pusack goes on to say that “the inclusion of the possibility that the utterances may be malformed is mind-boggling.” That is, as is well-known to instructors of foreign languages, non-native speakers of a language are capable of producing unpredictable, even bizarre errors.

In order to parse the input of non-native speakers, allowances for faulty spelling have to be made, especially for common errors such as missing soft signs or the substitution of *и* for *и*. The parsers described by Yazdani and Mulford contain components (“bug catalogues”) which contain common errors and use them to help the parser process more degenerate input. That is, these modules contain words which are not correct words of the language but which students often use, and interpret these words in the way the student most likely intended. This allows the computer to generate a good parse of the student’s input. The computer can also use this information as part of the feedback to students about their errors.

If two sets of language rules are used--one for the target language (Russian) and one for the native language (English), a parser may be able to identify errors which are made due to interference from the student’s native language. After all, many errors made by beginning students of a language are due to the improper generalization of a native language rule to the target language. This approach was implemented in SCRIPSI (Catt and Hirst, 1990). If a student makes an error which the parser cannot interpret given the rules of Russian, it can apply the rules of English to the unknown structure. A drawback to this approach is that rules for both English and Russian must be written and made available to the parser. While this is certainly not impossible to do,

it would be take more time and disk space to implement than just creating the Russian parser. It also may not be necessary. The implementation of student knowledge modeling (see section 2.5.4.2, above) may be sufficient to identify and remedy these errors. The current plan for the electronic textbook is not to implement this two-language parsing system initially, but to develop it later if the potential benefits warrant the work.

Pusack suggests that one intermediate step on the way to the development of true parsers is the use of the pseudo-parser, which evaluates student input on the basis of a pre-stored correct answer. Pseudo-parsers do not contain either a dictionary or a grammar of the language; they merely contain pre-stored correct answers in which each word has been labeled with appropriate grammatical information. Such pseudo-parsers therefore can only be used to analyze highly constrained input, and not free responses. The pseudo-parser significantly narrows the scope of what the program must look for in any given input. Given the progress in the sophistication of true parsers, the need for pseudo-parsers is lessening, but it is easy to see why they have presented an attractive intermediate step. Such a pseudo-parser was implemented in Frumkes (1994) in order to circumvent the problems associated with true parsers.

It is important to keep in mind that parsers cannot by themselves guess the causes of the errors made by students. They can be used to locate grammatical and semantic errors. But the work of predicting the underlying sources of student errors involves the use of a model of the learner which is implemented in concert with the parser.

2.5.6 Scores

As mentioned in section 2.5.1, students like to know how they are doing on their homework. It is imperative that instructors have this information as well, so that

they can better aid students who are experiencing difficulties. Such scores are an example of summative evaluation, or assessment which can be used to compare students against each other or to evaluate progress over time (Eleey & Farrington, 1994).

Students may have various reasons for wanting information about their work. Some want to make sure the instructor knows how well they are doing. Others want to know how well they are doing compared to other students in the class, while others simply want to be able to track their improvement. Steinberg (1991a) reports that students tend to be more satisfied with courses when they know their status in the class.

Scores need not always be reported to students in numerical form; their progress can be indicated in other ways. A progress bar which fills with color as the student draws closer to a given goal can be used to indicate successful progress through the exercise. Thus, if a student must answer ten problems correctly to complete an exercise, the bar can add one unit of color for each successfully completed problem, indicating how close the student is to successfully completing the exercise. In addition, students should be able to review their incorrect answers in order to better understand their errors.

Instructors need scores for different reasons. They need to know not only how well individual students are doing ~~but also what their problems are, and whether these~~ difficulties are isolated or common to the entire class. In addition, reported scores must be meaningful to the instructor. A list of numbers, for example, is useful in only certain way. If student Jack Sample answered 20 out of 20 questions correctly, this is sufficient information; the instructor does not need to worry about Jack. However, if Jane Doe answered only 11 problems out of 20 correctly, the instructor knows only that Jane is struggling, but does not know specifically what where her difficulties lie. Jane's problems may be quite different from those of Rick Roe, even though Rick also had a

score of 11 out of 20. A score report which contained all of Jane's and Rick's responses (correct or incorrect) would not be useful either. The instructor needs to see all of Jane's and Rick's errors to determine what their problems are. The student model will help the instructor to make these determinations. The reports should indicate which problems are shared by the majority of the class, so that common difficulties can be discussed publicly, while individual problems may be addressed in private.

Since scoring serves different purposes for students and instructors, the electronic textbook must present this information to these two groups appropriately. While students might be interested in each one of their errors, or their success on one particular exercise, instructors should only concern themselves with main trends either of individuals or of the class as a whole.

Chapter 3: The Electronic Textbook

The previous two chapters considered principles of pedagogy and the specifics of the textbook-based educational process. This chapter will address the challenges of transforming the traditional textbook into a new entity, the electronic textbook. This new text must take advantage of all the strengths of the computer to help the student learn. It must also aid students and teachers in becoming comfortable with its use. The electronic textbook will occupy a slightly different position in the language curriculum than the paper textbook did. The challenge lies in precisely identifying this new position.

3.1 What the Computer Can Do

As is evident from the discussion thus far, creating an electronic textbook means more than just taking a traditional, paper-based textbook and putting it on computer. That would just make the textbook bulkier and harder to transport. The addition of the “electronic” to the textbook must add value to the educational experience if we are to justify the use of the computer. Thus, the whole concept of the textbook must be rethought. This means that the electronic textbook will not look like any textbook we have previously known, and it will change education.

The electronic textbook will make use of the strengths of the computer, such as its ability to organize and reorganize information, its versatility in linking information, its capacity to use various media, its facility in adapting to a particular individual’s needs, and its manner of demonstrating new concepts and information.

Used as the basis of a textbook, the computer can not only fulfill these requirements, but perform the required tasks better than the traditional textbook can. Many textbooks, for example, provide glossaries and an index. But using them can be slow and inconvenient, requiring a lot of flipping of pages back and forth. The

electronic textbook will provide a “map” and other search mechanisms which will allow the user to find the same information more rapidly than is possible with a paper textbook.

Unfortunately, no matter how well-organized the presentation, how timely the materials or how proficient the editing, the contents of any textbook (paper or electronics) may be flawed or become outdated. But the electronic textbook has an advantage here. Its materials may be revised, updated or corrected quickly, as needed. Some textbook flaws may be corrected so swiftly that many students will never notice their existence. Learners will play an important role in this process of improving the textbook, as they will have the opportunity to report problems as they encounter them, giving them control over the materials and a sense of ownership.

The electronic textbook will also be highly adaptable to the needs of teachers and students. Instructors will be able to choose not to use some materials, or to substitute other materials in their place. These changes will not be evident to the students at all. In addition, instructors will be allowed and encouraged to create materials for the textbook which may be easily shared with others.

3.1.1 A New Educational Medium

Steinberg (1991b) notes: _____

“We tend to apply new technology within the constraints of past experiences. For example, books that were printed between 1450 and 1480 were almost indistinguishable from manuscripts of that period...In the early years of television, advertisements were written in a radio format, with a video component tacked on...Producers [of information] are conservative and prefer to work with familiar methods even though new technology can make their work easier and/or more efficient.” (p. 4)

This point applies to the use of computers in education as well. Eley and Farrington (1994) point out that while the *Expanded Books* of Voyager, which present traditional literary works on the computer, allow greater freedom of reading of text by providing quick searching and note-taking in the margins, such works are not the final vision of what computer-presented materials can do for us. They are but an intermediate step, and one that is closer to the paper-based book than the electronic reader.

Many attempts at integrating computers into education have resulted in the copying of existing materials from textbooks, workbooks and correction keys onto the computer. These applications do not take advantage of the special attributes of the computer. As a result, students perform exercises on the computer that they might well have done out of the textbook. They then compare their responses to the correct answers given by the computer, just as they might check them against a workbook answer key. Students who need more help or additional drill are referred back to their textbooks or instructors.

But the computer is clearly capable of more than this, as more sophisticated software has demonstrated. The computer can evaluate student responses and provide detailed and specific feedback, including review modules and extra exercises. More importantly, the computer can present more than just text: it can show pictures and play audio and video clips to make the text more comprehensible and interesting. It helps students explore the subject matter in a non-linear way, allowing them to look up unknown words without losing their place in the reading text or jump to additional explanations or related materials as desired. This flexibility allows students to get the information they need when they need it.

The facts and arguments given above lead to one conclusion: the electronic textbook is not a paper textbook, just as a magnetic audio tape is not a compact disc.

While both the tape and the disk can play music, holding one to the standards of the other or expecting one to behave exactly like the other is unreasonable. Similarly, it is not logical to expect the electronic textbook to be just like a paper textbook or to fulfill all the roles of a human instructor. The electronic language textbook is intended to present materials for language learning and to provide guidance when a human (such as a native speaker, instructor, or another student) is not available. Human beings will remain at the center of the language learning universe; the electronic textbook is only intended to make that universe easier to navigate and manage.

3.1.2 Strengths of the Computer

As mentioned above, creating the electronic textbook is not merely a matter of transferring an existing paper textbook to the computer. It means considering the strengths of the computer and using them to create a wholly new learning medium. Some of the tools available on the computer which are not provided by other media are the database, hypertext, multimedia, individualization and modeling. These areas will be discussed below.

3.1.2.1 Database

One of the main drawbacks of paper-based textbooks is that it can be time-consuming to locate any specific piece of information in them. The table of contents, the index, and visual memory are the main tools that humans use to find information in paper-based materials. In the paper textbook, most information must be repeated several times in order to make it accessible to students when they need it. For instance, the word *обувь* 'footwear' may be presented for the first time in a section on clothing, but it must also be listed in the glossary. It might also be listed at some point as an example of a feminine noun ending in *-ь*. Similarly, the conjugation of various verb types is presented once for pedagogical purposes, and then repeated later in reference materials.

The paper textbook is forced to put the same information in several different places, so that the student is not constantly flipping through the book looking for specific pieces of information.

The database can help solve many of these problems. The database is a repository of information which can be rearranged as desired. A good database is organized so that the same pieces of information can serve a variety of purposes. That means that each piece of information must be classified in a variety of ways, so that it can be compared to other pieces of information and the similarities between them highlighted. For example, the word *обувь* has an English gloss: 'footwear, shoes, boots'. This is true for all the vocabulary words in the database. It is a feminine noun ending in *-ь* which makes it similar to words like *тетрадь* 'notebook', *любовь* 'love', and *помощь* 'help'. It is not a countable noun, making it similar to *вода* 'water', *вера* 'faith' and *сметана* 'sour cream'. It is part of the group of words describing clothing, as are *шляпа* 'hat', *пальто* 'coat' and *галстук* 'tie'. If these various pieces of information (gloss, gender, countability, semantic class) are encoded for each glossary item, then the database can be used for a number of different purposes. That is, if the student wants to see the list of clothing words, the program need only search the glossary for those words and present them in a list; this list does not have to be stored separately in the program. If any clothing words are later added to or eliminated from the textbook and glossary, the list of clothing words would not need to be changed, because that particular list only exists when a student asks for it.

3.1.2.2 Multimedia

The paper book is especially good for presenting large amounts of text. This text may be augmented by sketches and photographs, but due to printing costs, these pictures must often be limited to one or two colors. Full color pictures are rare, and

often separated from the text which they are intended to accompany, so that they may be printed on higher quality, glossy paper. Since the visual materials are separated from the text they accompany, their effectiveness is reduced. The computer, however, has fewer limitations in its presentation of pictures. Any kind of picture may be used: a black-and-white sketch, a color photograph, or even a video clip. These images can be scaled to an appropriate size and integrated right into the text. Audio clips can be inserted right into the text as well, to be clicked upon and played. Pages on the World Wide Web have already made these sorts of presentations familiar to many of today's computer users. In fact, many users already take such presentations for granted, and will likely continue to do so in the future. Therefore, many of the exercises in Chapter 2 and the materials in Chapter 4 rely heavily on the computer's capacity to deliver multimedia presentations.

3.1.2.3 Hypertext

Hypertext is text that need not be followed in a linear fashion in order to be properly used or comprehensible. Hypertext allows the users to access other parts of the materials without losing their place in the main text. This allows readers to follow lines of thought inspired, but not elaborated upon, by the main text. This type of reading is familiar to those who use the interlinked pages of the World Wide Web.

In the arena of the foreign language textbook, hypertext can potentially be very powerful. Students can get glosses of unfamiliar words, see examples of forgotten grammatical structures, or read more detailed descriptions of a cultural reference, simply by clicking. Since they never really "leave" the section of the text where they are working, it is much harder for them to get lost than it would if they were flipping back and forth between the main text, glossary and reference materials.

The danger of hypertext is that non-experienced users can indeed get lost in it, as they follow links of interest which draw them further from their original reading. Thus, good signposting must be implemented to ensure that users can always quickly get back where they need to be. Such navigation issues will be discussed in more detail in section 3.3.1.2.

3.1.2.4 Individualization

Individualization of learning materials presented on the computer leads to adaptive textbooks which assess a student's progress and provide greater challenges based on that assessment. The textbook can also "observe" how a student uses the materials and give the student advice on how to proceed based on those observations. (This was discussed earlier, in section 3.5.5.2.)

The computer can also "observe" the way students use the computer and give them advice on using it more efficiently (Eleey and Farrington, 1994). Such shortcuts get the student "on task" more quickly and make more of the time they spend in front of the computer productive.

Since students will be guiding their own learning to a great extent, their individual experiences with the materials will differ. Students may rarely be exposed to certain exercise types which other students use quite often. But unless they discuss the homework with their peers in great detail, this difference will not be apparent to individual students. The textbook will appear to be a cohesive whole to each individual, yet present slightly different materials to each one. Students will be allowed to choose between various learning approaches and learn to use the methods which are most helpful to them personally. The electronic textbook will help guide them to materials which have the best chance of benefitting them.

3.1.2.5 Modeling and Expert Systems

Another possible direction the electronic textbook could take is in the direction of expert systems. An expert system is a computer program which imitates the knowledge of a human who is an expert in a particular field. Such systems are used by banks, for example, to determine whether a given customer qualifies for a loan. One expert system (MYCIN) is used by doctors to diagnose and recommend treatment for certain diseases (Alessi and Trollip, 1991).

Expert systems are normally based on sets of multiple choice questions and rules of the "If x, then y" type. That is, the system asks the user a question and then uses the answer to that question to determine what other questions to ask. Once the system has gathered enough information about the user's situation, it can determine the type of help or information to provide.

One possible use for expert systems in language learning could help students determine which of a set of related words should be used in a given context, such as the highly confusing set of verbs which express teaching and learning (УЧИТЬ, НАУЧИТЬ, ВЫУЧИТЬ, УЧИТЬСЯ, ПРЕПОДАВАТЬ, ИЗУЧАТЬ, etc.) Using expert systems to execute this type of dictionary query could be very beneficial to students, and help avoid the perennial problem of choosing the wrong word in certain contexts.

Whether expert systems could be used to help students determine their learning needs in the realm of grammar or functional, communicative categories is a different question. One might argue that student knowledge modeling (discussed in section 2.5.4.2) makes use of student responses to exercise questions much in the same way that an expert system uses answers to the questions it poses. If the student knowledge model were constructed properly, students could perhaps examine it to find out their achievement levels in various areas, and find out how to improve their results. Again,

whether this is feasible will be determined by the structure of the student knowledge model.

3.1.3 Possible Drawbacks of the Electronic Textbook

Although the electronic textbook will provide a number of learning opportunities, it cannot be expected to cure all the ills of foreign language education. It may even exacerbate some existing problems or create new ones. Some of these difficulties, and possible solutions to them, will be examined here.

It must be kept in mind that any textbook, whether printed on paper or programmed onto a disk, is merely a tool which can help people learn. As Coleman (1991) points out, "Good tools can enhance good practice: they cannot eliminate bad practice." That is, if the electronic textbook is to be successful, it must be used alongside good teaching and learning techniques both within and outside the classroom. It cannot be expected to improve education on its own.

One large objection to the idea of the electronic textbook is that unlike paper textbooks, it cannot be easily transported and used wherever and whenever students choose. By definition, the electronic textbook requires a computer and a power source to operate, whereas a paper textbook requires only a light source. Another objection is that while literate people generally know how a book is used, they do not necessarily know how a computer is used.

The complaint here is that students come to a language class to learn a language, not how to use a computer.

However, it must be kept in mind that this electronic textbook is intended for use five to ten years from now, at the beginning of the 21st century. Given the large strides technology has already made in miniaturizing computer components (fitting more memory into a smaller space, for example), power sources (more compact batteries

which hold their charge for a longer period of time), presentation devices (smaller screens and projectors), and internet access (wireless modems), by that time the electronic textbook comes to exist, it will likely be as easy to use and transport as today's materials.

In addition, people are becoming more computer-literate. It might even be argued that some of our primary and secondary school students are more computer-literate than book-literate, due to the amount of time they spend using computers instead of books for study and recreation. Many of the problems encountered by today's college students using computer-based materials are due to their lack of experience with computers. Tomorrow's college students will be much more experienced in computer use and will not experience the same difficulties.

As Kozma (1991) points out, people unfamiliar with a medium may not use it to its full benefit. It could be argued that students still do not know how to use the technology they already have. That is, they do not know how to use the textbooks, workbooks, dictionaries and audio tapes which have been common for years. Many students appear to be unaware of the existence or proper use of the index, glossary, or reference tables which their textbooks contain. In addition, teachers continually complain that students do not look at the homework and tests which have been graded and returned to them, do not listen to audiotapes, and use dictionaries poorly. This is probably not entirely the fault of students. It is likely that they have never been taught how to use these resources correctly. However, the electronic textbook will instruct students in its proper use as it instructs them in Russian. This should help alleviate such problems.

Yet another objection which may be made regarding the electronic textbook, and to the use of computers in education in general, lies with the fact that we still do not

know how effective these materials are. It is still not clear that they are better than paper-based materials. Many of the studies which have endeavored to determine whether paper-based or computer-based materials are preferable are flawed (Clark, 1983). It may be that it is in fact bad research to compare the findings from a treatments using recent technology to those which use traditional resources, making it nearly impossible to conduct a principled study comparing the two media.

It may be that the question of whether the computer makes teaching more effective is not the real issue. The reality is that today's primary and secondary students--the college students of tomorrow--are constantly being exposed to and encouraged to use computers. By the time these students reach the university level, is it not possible that they will be so used to using computers for learning that paper-based materials will seem as hopelessly outdated to them as quill pens are to us? Just as today's college professors do not consider a hand-written essay (as opposed to a type-written or word-processed one) a serious educational effort, future college students may not consider paper-based materials to be a serious effort on our part to help them learn. That is, by the time these students reach us at the college level, paper-based materials may not be considered by students to be acceptable transmitters of education. Students will expect to be taught using computers, and educators will have to fulfill that expectation.

Finally, when we consider the electronic textbook as a new medium for language education, we must keep in mind that it is not intended to replace either instructors or fellow students. It is merely intended to help students learn concepts which cannot be conveniently or efficiently practiced in class or even one-on-one with another human being (Laurillard, 1991). While the electronic textbook assumes responsibilities which were previously assigned to humans, it cannot do all the jobs which human teachers do.

The electronic textbook is meant to take over the menial tasks associated with language teaching, allowing the teacher to spend more time developing communicative materials to be used in class.

3.2 Physical Challenges

For some students, difficulty using the computer may be due to something more than mere inexperience with using it. Physical difficulties may keep students from using the materials as intended. These complications must be addressed whether the computer program in question is a word processor or an electronic textbook of Russian. There are two types of problems: pre-existing handicaps and injuries caused by the computer.

Some handicaps, such as blindness or paralysis, are readily apparent to instructors. No matter what the medium of instruction, certain special accommodations must be made for those students. However, some handicaps are not so obvious. And due to their nature, computer-based materials may affect students with those handicaps in a way that printed materials did not.

One "hidden handicap" which affects 8% to 10% of North American males is some form of color blindness (Schneiderman, 1992, Maddison and Maddison, 1987). Since the computer can make use of a wide range of colors, many programs use color-coding to organize information. For example, many people set their World Wide Web browsers to display text in one color, links (text upon which one can click on to see another document) in another color, and links which have already been explored in yet another color. This can cause trouble for individuals affected by color blindness. Paper textbooks have generally not presented difficulties for color-blind individuals. Cost considerations have generally precluded using more than two colors of ink in printed materials, which effectively precludes the possibility of extensive color-coding.

For some individuals, then, color-coded materials present problems. These people may need to have text differentiated using methods other than color coding. Those with less severe cases of color-blindness may only need to adjust the color scheme to include the hues which they can differentiate most easily. Others may choose to differentiate between different types of text not with colors, but with different fonts or text styles (italics or underlining, for example).

The computer may bring good news for students with other types of handicaps, however. Phillips (1987) reports that “those students who have a tendency to transpose letters and sounds seem to be helped by the fact that they have to enter the vocabulary into the computer one letter at a time” (p. 180). In addition, students whose hearing is limited will have a better opportunity to hear a great deal of input in the target language accompanied by pictures and text. For them, absorbing such material in class or via traditional audio- or videotapes may be problematic; the computer will give them the opportunity to hear relevant audio as many times as they need and will annotate it with text and pictures. The audio delivery system can also be adapted to their personal needs.

Many people who spend a great deal of time in front of computers have discovered that certain injuries accompany extensive computer use. These injuries usually stem from the repetitive use of certain muscles, improper posture, and the failure to take proper rest breaks. Since the electronic textbook is envisioned as a piece of software which students will use daily for extended periods of time, it would be a friendly gesture for it to include information which will help users avoid injury. Exercises and stretches too can lessen the possibility of neck and back injury. Properly placed equipment (screens, keyboards and chairs at the proper height) can help prevent injuries to the arms, neck, shoulders and back, as can the use of specially designed keyboards and mice. Taking breaks and refocusing the eyes on a regular basis can also

reduce the chances of permanent injury to the eyes and headaches. Thus, the electronic textbook should make appropriate suggestions on a regular basis to help students avoid these problems.

3.3 Organizing the Electronic Textbook

Perhaps the most challenging problem posed by the electronic textbook is its organization. Students always know where they are in a traditional textbook because they can see page and lesson numbers on every page, and they can approximate the number of pages in the book just by looking at it or weighing it in their hands. But in the hypertext, virtual world of the electronic textbook, wayfinding is quite a different matter. Navigation of both the interface as well as the individual screens must be undertaken. That is, special care must be taken that students do not get confused or “lost” in the materials. Various conventions must be established and adhered to which will help the student use the textbook efficiently. Such standards include the organization and amount of information on the screen, the use of color coding, the use of visual and audio aids, and the use of language itself.

3.3.1 Wayfinding

One of the greatest challenges of designing a computer-based textbook is ensuring that students will be able to successfully navigate through the materials. If students cannot find the materials they need when they need them, the textbook is useless. Kerr (1986) focuses on two aspects of electronic text: the interface and the surface. The interface is the system that allows the user to move between the levels and parts of the textbook, while the surface is the part of the textbook that the user views at any particular time. The interface connects the various parts of the textbook and makes it useable, while the surface is the portion of the textbook which the student sees at any

given time. The following sections will address the difficulties of preparing and navigating the interface as well as the surface.

3.3.1.1 A Familiar Interface

If the aim is to make students comfortable with computer-based materials, why should they not be presented in a familiar format? That is, since students are used to using books for their learning, perhaps the computer interface should adopt the book metaphor for navigation. This approach is suggested by Benest (1990). This book-like interface even uses the metaphor of page turning to move between screens. It limits the amount of typing the user must do, allowing most of the navigation to be performed with the mouse. Bookmarking, margin notation and highlighting, note-taking devices normally associated with books, are also used.

While this approach is appealing in its familiarity, it errs by looking backward to yesterday's technology instead of forward to tomorrow's. People are already becoming more comfortable with interfaces more suited to the computer environment. That is, they are becoming more comfortable with hypertext style interfaces (see section 3.1.2.3). Hypertext is what drives the exploration of the World Wide Web, and it is being incorporated into an increasing number of applications which educate and entertain. Thus, by the time the electronic textbook comes into existence, navigation of the textbook will be simplified by the fact that many parts of the interface will be familiar to the user. Therefore, there is no reason to implement an interface which does not really suit the computer medium, such as the book metaphor. A more appropriate interface is already in development.

3.3.1.2 The Interface: Moving Between Units and Sections

A good interface is valuable for many reasons. It allows students to navigate through the materials without getting lost. In addition, it advises students on how to

proceed by tracking their progress through the materials. That is, as discussed earlier, it provides students with a number of paths forward in the material, basing those choices on past performance. For example, the student may require review of a concept, and the program should allow the student to access the review materials easily. In summary, then, the interface must include information about which materials they have already covered, how successful they have been, and how they should proceed next.

One way of helping the student access and use the materials is through the use of an instructional map, which provides a very graphic view of the materials. However, the instructional map need not be the only way to navigate through the materials. Students may also want to locate specific concepts in the materials using keyword-based searches. Finally, obvious titles on each screen will keep students informed of their location in the materials and their purpose for using them.

3.3.1.2.1 Instructional Maps

Maps which graphically represent the structure of computer-based materials can help students find their way. Such maps are similar to the list-like menu systems which are commonly used in today's computer applications, but are much more graphical in form. In fact, their organization is very much like that of a flowchart. Such instructional maps (Barba, 1993; Alessi and Trollip, 1991) show students which materials they have already used and which will be encountered later. Students can navigate by clicking on the part of the map they want to go to.

Instructional maps are a method of signposting (Orna, 1985). They give users an overview of the contents of the textbook and serve as guide through those materials. However, it is not enough to make available a number of routes through the materials; those routes must be documented with information and other help features. Orna goes on to suggest the use of organizing devices such as checklists, summaries,

questionnaires, tables and diagrams to help the user in navigation. Most of these devices can be very easily worked into the instructional map.

An instructional map cannot provide all the information about the textbook at once. The map would be much too large to fit on the computer screen and would have too much detail for users to find the information they need quickly. Therefore, they should be constructed so that they present general information first, and then provide increasingly specific information as requested. That is, if users need more detailed information about a specific topic, pointing and at that subject on the map will provide this information. (This approach similar to that used in Balloon Help on the Macintosh®.) If users are curious about the contents of the first unit, they could position the mouse over the words "First Unit". Information would appear which would tell the student that the unit presents information on writing certain letters of the alphabet, greetings, and pronunciation, and, if possible, give an example of each. But the program would not actually go to that first unit until the student actually clicked on the map. This approach would allow users to preview the materials without bothering with all the details, just as a good table of contents does. This previewing approach may help to avoid the problem warned of by Kerr (1986): users may choose the wrong item from a menu because they do not understand the menu's contents. They then fail to find the information they need at the lower menu levels, and become frustrated. However, with this map-preview system, they can get an idea of where they are going before they get there.

The map can also be used to indicate which materials the student has completed. Once students have completed a particular instructional module or exercise set, they need not follow the map back up to the highest level of generality. Rather, the map can indicate the next logical choices students should take to continue their studies.

Information can be mapped in a number of different ways. One informational map might give information on the materials as they are organized by lesson. This sort of map is most useful to the student who is proceeding through the materials for the first time. Another map might arrange information by grammatical category, which is useful for review. Yet another would provide information arranged by functional topic. Each of these types of maps could be identified by an icon as well as distinctive color-coding for quick identification. In this way, users can find the information they want, even if they are not immediately sure what it is they are looking for. Color-coding could also be used to indicate the areas which the student has already covered and differentiate those from the ones which the student has not yet explored. This should help to narrow the choices from which the must choose and help keep the user from getting “lost” in the materials.

The instructional maps will be accessible at all times, available by clicking on an icon which will be on the screen at all times, no matter what activity the student is pursuing. This will allow students to gauge their progress and plan their time, without being distracted by the map. At the same time, they will have the opportunity to use the map when they need it.

3.3.1.2.2 Searching

The instructional map will not be the only navigation tool available to the users of the electronic textbook. Kerr cites research suggesting that regular users of a program prefer to employ keywords rather than menus in searching. When users have a specific idea of what it is they are trying to locate in the materials, and know a word which refers to it, they should be able to search by entering a keyword or two which describes the desired topic. Thus, when users type words like “greetings,” “imperatives,” or “Unit 18,” they will be directed to an appropriate part of the textbook.

Such search mechanisms are becoming increasingly more familiar as people learn to search databases for particular pieces of information, and students should not experience difficulty using them.

3.3.1.2.3 Titles

Perhaps the most obvious, and most often forgotten facet of signposting is the use of titles. Each presentation and exercise screen (not just the first one in an exercise or presentation) should be clearly labeled to indicate the name of the section, as well as the student's progress through it. The use of titles on each screen allows users to identify where they are in the materials without continually resorting to the maps and search mechanisms. This sort of titling is used throughout the presentations on the diskette accompanying this dissertation.

3.3.1.2.4 Further Navigation Help

No matter which search system students prefer to use--the instructional map or the keyword search--they must still have guidance to prevent them from getting "lost" in the materials. The electronic textbook will allow students to retrace their path through the materials until they get back to a familiar place. In addition, it will attempt to make the materials students are most likely to need at a given point in time more obvious. That is, the textbook will direct students to materials which are likely to be useful to them at any particular time, instead of encouraging them to go wherever they want.

This feature is vital, as care must be taken not to overwhelm users with too many choices at any time (Kerr, 1986; Hartley, 1985). If too many choices are available, users may not be able to determine which paths are appropriate to their needs, especially when the materials are unfamiliar. (This consideration recalls the discussion of control in section 2.5.2; too much freedom is no freedom at all if people do not know how to use it.)

However, none of this signposting does the users any good if they are not aware of its presence. The logic and purpose of maps, search mechanisms, and titles must be made clear, and their use explained at the very beginning if they are to be successful in aiding the learner. This sort of orientation to the materials is necessary even when the materials are as familiar as a traditional paper-based textbook.

3.3.1.3 The Surface

Once students have located the portion of the instruction which they intend to use, the program must continue to support their navigational needs. Additional navigation and help resources must be available, not only to help them understand the information on the screen, but also to get them through the exercise or access other parts of the textbook, if necessary.

Steinberg (1991b) points out that “students are most likely to view information in the desired sequence if the designer presents it the way they will process it naturally” (p. 150). That is, information should be placed where users will expect to find it. It should therefore be organized left to right and top to bottom, the direction in which both Russian and English are normally read. Thus, when a student has just finished reading a display (from top to bottom), new information should be placed at the bottom. Similarly, if students are expected to enter a response to a question, necessary instructions for entering the response should be located before (closer to the top of the screen) than the area where they are to enter the response. And if the computer is evaluating performance on an exercise, the feedback should be placed close to and after (below) the student’s answer. Attention to such details helps ensure that students will find the information they need when they need it.

In addition, changes to the screen display should be made obvious. A very small change to a display is likely to go unnoticed. However, if the visual change is

signalled by a sound (such as a beep) or a visual effect which affects the whole screen (such as a flash), users will be more likely to notice it. Such tactics are used by many existing computer programs to attract the user's attention. In addition, if the altered portion of the display is made to look different from its surroundings, the user will be more likely to notice it. Graphics such as arrows or techniques like flashing text may aid in guiding the eye to the appropriate part of the display. Another way to ensure that students will see changes to the screen is for those changes always to be prompted by the student, either by a keystroke or a mouse click. That is, the student should be the one to decide when to go on to the next section, thereby changing the contents of the screen.

In paper-based materials, unrelated topics are placed together on the same page. This makes the textbook less expensive because it requires less paper. However, this type of space conservation is not as important on the computer. There, individual ideas and topics can be placed on individual screens. As Steinberg suggests, related information can be presented in small chunks. One students have finished reading one screen, they may be asked to press a key or answer a comprehension question before proceeding to the next informational segment. This approach encourages students to carefully attend to the important details of the information presented to them. However, individual concepts should not be unnecessarily splintered between screens. Continuity must be maintained while avoiding the temptation to fill every screen with as much information as possible. Balancing the amount of information on the screen is very delicate procedure which must be carefully managed.

When people read a book, they usually do not perceive the turning of pages as an interruption of the narrative. Users of narratives on the computer must experience the same continuity. Therefore, moving to the next screen should not take too much effort

on the part of the user or the flow will be disturbed. The user should only have to click the mouse or hit a single key to proceed. If more action than that is requirement, the reading process may be disturbed, and the student may fail to recognize the continuity of materials between screens (Steinberg, 1991b).

Sometimes computer users do not strike a key for an extended period of time. This can suggest several things as far as the computer is concerned. It could mean that the student has stopped working unexpectedly and left. Or, it could mean that the student is unsure of how to proceed. In such cases, the program should ask the students if they need help (Steinberg, 1991a; Smith & Boyce 1984). This query should be obviously placed on the screen and perhaps accompanied by a noise to alert the user.

It is also vital that students know where they are in any particular exercise or presentation. For example, tutorials should inform students how long the presentation will last and what part of the presentation they are using. This may be expressed by the number of screens in the presentation: for example, "Screen 4/6" would indicate that the tutorial in progress is comprised of six screens, and the student is currently viewing screen number four (Steinberg, 1991b). Similarly, as discussed in section 2.5.4.1, the computer can indicate how well a student is doing on an exercise, as well as how many more problems are required.

Finally, students must be made aware that these pieces of information are available at the touch of a key or the click of the mouse. However, the availability of this information must not distract from the task at hand. See the presentations in the pocket materials for examples of how these materials might best be placed.

3.3.2 Visual Aids

Visuals can be used for both educational and aesthetic purposes. But our main goal is to enhance learning and memory, not to provide pictures for their own sake

(Palmer, 1987). Therefore, the emphasis here will be on the way visual aids can be used to educate, not on ways to make the electronic textbook visually appealing.

It has been shown that visual aids help learners when care is taken in their use. Still pictures, animations, video and other visual effects (such as color, flashing, highlighting, etc.) can be used to various ends. They can make the presentation more pleasing to the eye, encouraging the learner to use the materials. More importantly, they can also be used to attract attention to important aspects of the instruction as well as the relationships between its various sections (Steinberg, 1991b). But if used too often and exclusively for these ends, visuals lose the attention-attracting power which enhances learning; they can bury the important points and distract the students from the material to which they should be attending. In the worst case, pictures can become nuisances which cause students to avoid the instruction containing them altogether--exactly the opposite effect from the one we want (Smith & Boyce, 1984).

The graphic capabilities of the computer can be used for various types of educational demonstrations. We can use it to show the formation of individual letters of the alphabet, instead of following the traditional textbook diagrams or watching a teacher write them out (Chan & Liu, 1992). (See the diskette in the pocket materials for an example of writing Russian letters.) Changing the appearance of certain characters in words can be used to draw attention to their morphology. This approach can also be used to illustrate the construction of forms like the imperative. The computer can demonstrate a process where the last two letters of the third person plural are removed and the resulting stem is examined to determine which "ending" to add. A step-by-step flowchart (as discussed in section 2.2.1.1) showing the formation of the imperative can be incorporated into this presentation. After watching the demonstration and examining the flowchart, the student will better understand the formation of the imperative than if

he had only read an explanation of the procedure (See the pocket materials diskette for an example of the use of this dynamic flowchart in presenting the imperative mood of verbs.).

Video is also a valuable tool. It can be used to demonstrate the different uses of verbs of motion and aspect, for example. For example, to illustrate the perfective in *Он закрыл окно* 'He closed the window', we can show a video clip of someone closing a window and then walking away, whereas the imperfective *Он закрывал окно* can show a person shutting a window and then opening it again. Such uses of video represent an educational presentation which is not possible using traditional materials. They are examples of truly useful marriages of various media. The key is to use them judiciously and appropriately. This will be discussed further in the following sections.

3.3.2.1 Details and Realism

Since video is readily available as part of multimedia resources, it is tempting to use it wherever possible. However, research has shown that highly realistic images, such as those provided by video, do not always facilitate learning.

Dwyer (cited in Hartley, 1985) found that the realism of illustrations had no effect on scores on tests which used these materials. Other research suggests that when visuals are too complex in their realism, the learner may not be able to determine which information in the picture is critical, and which is unnecessary. Learning may therefore be hindered by overly realistic pictures (Steinberg, 1991b). Kale and Grosslight (1955) found that students did equally well retaining vocabulary whether they used motion pictures or still pictures. And overall, they found that students using any pictures at all showed better retention and and quicker relearning of written vocabulary than did those who were only exposed to text. In general, the pictures we want to use are concept-based pictures, which represent the idealized forms of objects, as opposed to

observation-based pictures, which can foster errors in perception due to their close imitation of reality (Twyman, 1985).

One example of confusing details is described by Maddison & Maddison (1987).

“...we found two major problems with our youngest daughter’s alphabet book; D for Dinosaur elicited first ‘monster’ and then ‘Stegosaurus’ (which it was), and the picture of a nurse with a brown face led her to assume that the word ‘nurse’ meant ‘black person’, not ‘someone who looks after sick people.” (p. 24)

In this case, it was a child learning native-language words who encountered the difficulty, but it is easy to imagine that an adult learning a second language might encounter a similar problem with unclear pictures.

It turns out that pictures do not need to be true to life in order to communicate meaning. Dwyer found that simple line drawings were effective when the speed of media presentation was not determined by the student, but that more detailed drawings were more effective in presentations where students had control over the pace of presentation. The success of stick drawings is evident in existing materials for Russian. In Alexander Lipson’s *A Russian Course*, stick drawings are often used instead of English words as cues for exercise completion. For example, a rough sketch of a faucet represents the verb *мыть* ‘wash,’ while a face with a halo over it represents the adjective *хороший* ‘good’. Since the same drawings are used throughout the book, the student becomes accustomed to seeing them and knows what they mean. Other textbook authors have used stick figures in the same way. Coleman (1991) notes one French course which uses stick people to represent humans and a blob with an eye and a tail to represent a fish to elicit sentences like “I have one sister, two brothers, and a goldfish.” The pictures used in instructional materials must capture the essence of the

objects they represent; they need not contain great detail. A presentation which uses pictures to cue student input can be found in the “Sentences” demonstration on the diskette.

One lesson to learn is that isolated examples are often undependable. This is illustrated by the example of the monster/dinosaur/stegosaurus in the children’s book mentioned above. Any single act of communication, whether verbal, visual, or textual, can be misinterpreted, especially when context is scant. Sometimes extra information is needed to clarify meaning. This extra information may take the form of another picture, a gloss, definition, description, or a sentence showing how the target word is used. Such clarifications must be available if the language learner is to “communicate” adequately with the textbook and learn from it. Indeed, Booker (1975, cited in Hartley, 1985) found that pictures accompanied by text provided better instruction than pictures or text alone. Thus, a variety of different illustrations and other descriptive materials must be included in the electronic textbook.

3.3.2.2 Pictures and Culture

We must keep in mind that individuals are a products of the culture in which they grew up, and therefore each one brings preconditioned ideas to any new experience (Twyman, 1985). Because of this, an American learner who is unfamiliar with the Russian Orthodox religion might not recognize the onion-domed buildings as churches. They may not recognize the women with the tall paper hats getting out of the gaudily painted van as paramedic nurses rushing from the ambulance. Indeed, pictures should reflect the target culture as well as provide instruction in the language (Palmer, 1987), but we must take care to ensure their proper interpretation. Again, this can be made possible by including other types of visual or verbal information.

3.3.2.3 Visuals and Different Learner Types

As discussed in section 1.6.1.1, individuals display various cognitive strengths and weaknesses in the way they learn. For example, some people can learn best from what they hear, others from what they see. Good visual aids can help those who learn best in the visual modality to achieve greater success. However, research also indicates that the maximum use of visual devices, apart from text, is necessary for learning among all individuals (Sharwood Smith, 1988a).

Sometimes, it is not the presentation of pictures as part of the materials which is valuable. If students are asked to form images in their own minds, instead of merely viewing the images presented to them, their recall of the associated words will increase over time (Erdelyi et al., 1976). This is a key element of the mnemonic keyword method discussed in section 1.2.2. Such visualization techniques may prove particularly valuable in the learning of abstract content, which is difficult to depict on the screen.

3.3.2.4 Color

Writers of traditional textbooks have generally been prohibited from using color due to printing costs. The constraints placed on the computer in this regard, however, are much less serious. Color monitors and software which supports color are available to more students with each passing day. ~~Now we can explore how to help students learn better using color.~~

Color, when properly used, can be a very valuable addition to the learning process. Color coding, as well as icons and menus, can help users keep track of where they are in the materials (Kerr, 1986). Proper color coding can show students which materials they have already covered, indicate which vocabulary words they are responsible for learning actively, and highlight important portions of reading passages. Color has been shown to reduce cognitive workload when properly used to organize the

materials, because it can lessen the amount of chunking which the learner needs to do (Steinberg, 1991b.) These are but a few of the possible uses of color which will be incorporated into the electronic textbook.

Today's computer users do not want color just for its convenience and other practical qualities, however. Just as small children insist on picture books, today's computer users expect colors and graphics as a matter of course, whether or not they are of any practical use (Kerr, 1986). So it would seem the electronic textbook is compelled to provide color in its presentations whether or not it serves a practical purpose. The trick is to satisfy the user's desire for color while employing it as an organizational tool.

Color used improperly can become a nuisance. If too many colors are used, they may confuse learners, rather than helping them. Many computer users have experienced a similar problem when they have a great number of different fonts at their disposal; in their zeal to differentiate, they create documents which are difficult to read. (This problem is mentioned in Steinberg, 1991b.) Similarly, we must limit the number of colors employed and clearly define how those colors are used to avoid confusing the learner. Shneiderman (1992) makes several suggestions for using color effectively. First, no more than four colors should be used in any presentation. Second, it is important to use the same color schemes over the entire presentation. For example, if the color red is coded to grammar explanations, it should not be later used to signal a cultural explanation. Finally, the meanings of individual colors should be communicated to students to help them navigate the materials more easily.

In addition, the electronic textbook must allow color schemes to be changed, perhaps even to font-based schemes, to accommodate individuals who experience difficulty in distinguishing colors (Maddison & Maddison, 1987). The importance of accommodating such handicaps was discussed in section 3.2.

3.3.2.5 Textual and Spatial Visual Cues

When we speak of visual cues, we must remember that they include not just pictures and color, but also the presentation of text. The judicious use of visual effects can enhance the usefulness and comprehensibility of text. Again, care must also be taken that the effects do not distract the learner from the content of the materials.

The highlighting of text through the use of different colors or text styles (boldface, italics, etc.) can indicate to learners the main points they are to learn. But the way this text is emphasized must be considered. If too much text is affected by the use of typographical cueing, none of the cued text stands out.

Another consideration is the method of highlighting. For example, text in capital letters takes longer to read and takes up more space than standard writing, and does not stand out as readily as boldface does (Felker, Redish, and Peterson, 1985). The use of capital letters is therefore not a very effective way of highlighting. Finally, Hartley (1985) warns that cueing may not be effective unless the reader has been informed about the meanings of the cues. That is, users must be informed about what the different text styles indicate; otherwise, these visual cues become merely a visual distraction instead of providing assistance.

Hartley has further found that spatially-oriented cues are more effective than typographically-based cues. That is, the arrangement of the materials for on the page is more important than whether the information is differentiated by color, font, or type style or the appearance of the individual words. Certain arrangements of information work better than others. For example, in experiments with index types, readers were found to prefer horizontally-oriented formats to vertical ones. That is, they prefer presentations such as the following:

Unit 5 More on the Dative Case Nov. 11

Unit 6 Introduction to Verbal Aspect Nov. 18

They find it more difficult to use the same information when it is displayed in the following manner.

Unit 5

More on the Dative Case

Nov. 11

Unit 6

Introduction to Verbal Aspect

November 18

In summary, visual devices can be useful to all types of learners. However, care must be taken that visual cues are not confusing. The best pictures for learning are simple, capturing the essence of that which we want to communicate. Pictures which contain unknown cultural elements or too much detail can hinder learning. When pictures fail, other forms of communication should be made available to supplement the learner's knowledge. Finally, while color is one type of visual aid which can be very useful in highlighting information, font style, font size, and the arrangement of materials can be helpful as well.

3.3.3 Audio Aids

The contents of the traditional textbook generally come in two parts: some materials on paper and others on magnetic tape. The tapes were meant to be used in a language laboratory (or, later at the student's convenience on their own tapedecks or personal stereos) and accompanied the exercises in the book. However, as teachers have

discovered over the years, students rarely use tapes as they were intended. One reason for this is that they seem to the students to be a peripheral part of the course. That is, they see the book and the teacher as their main resources and do not see the value of using the tapes. Thus, they do not get the aural input that the textbook author intended.

The electronic textbook brings aural input directly into the textbook, thereby eliminating its peripheral status. Using the multimedia capabilities of the electronic textbook, students can hear the words they are reading, without encountering the inconvenience of fast forwarding and rewinding magnetic tape. They simply click, and the digitized audio material is quickly located and played.

Where appropriate, the electronic textbook will provide materials in both aural and written format, providing good reinforcement (Coleman, 1991). Thus, while the electronic textbook will still marginally favor the visual learner (the computer being still principally a visual medium), aural learners have a better chance of getting the input they need, because the audio materials are an integral part of the presentation.

3.4 Changing Education with the Electronic Textbook

Just as new communication media change the way people interact and converse with one another, it is likely that new educational media will change the way we learn. This is certainly the position of Chan and Liu (1992). They argue that the paper-based book, which is silent, linear, and static in motion, has driven the language classroom to be the same way to some extent. They agree that the multidimensionality and interactivity (indeed, the strengths asserted throughout this chapter) of the computer will encourage language classroom to follow a similar path. They feel that bringing high computer technology to learning will cause teachers to think about the way they teach foreign languages and change their methods. This is certainly in keeping with Marshall McLuhan's 1966 assertion that "the medium is the message."

If the electronic textbook is used, as proposed, to allow students not only to individualize their learning, but to more conveniently interact with their fellow students, instructors, and native speakers of the target language, the culture of the educational classroom will likely change as well. Students may find that their peers in the classroom are a more important part of the learning process than ever before. Instead of seeing their fellow students as competitors or inconsequential others, they may come to see humans as a valuable resource alongside the textbook.

Of course, it is not possible to accurately predict the effect that the wider use of computers will have on education. However, it is safe to say that they will at least change the way people see education and how they are educated. This can be seen with the already growing use of the Internet and the World Wide Web as the basis for distance learning courses. Exactly what the final outcomes of these increased uses of technology will be cannot be stated at this time, but it seems safe to say that education in the future will be different from education today.

Chapter 4: The Russian Textbook

In this chapter, the contents of a textbook of elementary Russian for college students will be set forth. First-year textbooks are expected to contain material covering certain topics, and this textbook must also address those areas if it is to be accepted for use in a college setting. Therefore, to determine the contents of this electronic textbook, the presentations of existing textbooks have been used as a partial guide. The textbooks which will be discussed here are: *Начало: When in Russia...* (Lubensky, Ervin and Jarvis, 1996); *Голоса : A Basic Course in Russian* (Robin, Robin and Henry, 1994); *Russian: Face to Face* (Morris, Vyatyutnev and Vokhmina, 1993); *Russian Alive!* (Cioran, 1992); *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* (Kostomarov, 1987); *Russian* (Clark, 1983); and *A Russian Course* (Lipson, 1981).

4.1 Grammar Topics

The electronic textbook will succeed in presenting the appropriate materials only if it focuses on helping students to achieve specific goals. Thus, we must determine what these goals should be.

The general assumption of most college-level Russian teachers seems to be that all main grammar concepts should be covered in a general manner during the first year of study. Then, in the second year, the first-year material is reviewed and then augmented with the presentation of exceptions and new lexical items. Certain topics, such as the basic exposition of verb conjugations, the case system, aspect, and agreement, are common to all textbooks. Therefore, they will be included in the electronic textbook. Other concepts, such as the formation of participles, are not generally presented in the first year, so the electronic textbook will provide only a rudimentary introduction to this concept. Given today's emphasis on function and communication, it is important that the sorts of communication we wish students to be

able to perform also be emphasized and integrated into the overall goals for the book. Finally, we would like students to be able to use authentic materials, even if at only a very rudimentary level.

4.1.1. Verbs

To get a general idea of the concepts students are expected to learn in the first year of language study, one only need to make a survey of existing Russian textbooks. As it turns out, the textbooks all present certain core concepts while leaving others for later study. For verbs, this basic overview includes an introduction to the tenses and moods of the Russian verb system as well as aspect. This includes exposure to imperfective verbs in the past, present and future and perfectives in the past and future. The introduction to aspect in elementary Russian concentrates mainly on the use of the perfective to express emphasis on a result and the imperfective to express the lack of such an emphasis, the duration or repetition of an action. The uses of infinitives, imperatives, and real and unreal conditional constructions are also presented and exercised in first-year textbooks. The electronic textbook will not stray too far from this norm.

Students using the electronic textbook will become thoroughly familiar with the use of unprefix verbs of motion and receive a general introduction to prefixed verbs of motion. They will also become familiar with verbs of position (садиться/сесть 'sit down', сидеть 'sit', etc.) and the use of Давай(те) 'Let's...' and пусть 'Let...'. They will also learn the proper use of reflexive verbs (as in the sentences Он моет собаку 'He washes the dog' versus Он моется 'He washes (himself)'). They will also be introduced to the use of the particle -ся in middle and passive constructions (Это платье легко моется 'This dress is easily washed'), although the bulk of their training in this arena will be left for later Russian study.

In all the above cases, both recognition and production exercises will be required. Learning of more challenging concepts, however, will be more limited. For example, participles will be introduced late in the course, but work on them will be limited to discussion leading to a general understanding of the meaning of these forms. Only recognition exercises will be presented; production will not be required. Such rudimentary work on participles will allow students to recognize them in authentic materials, where they occur too frequently to be ignored.

Students will learn verbs of most main types and both conjugations, as well as the most common irregular verbs, such as МОЧЬ 'be able', ХОТЕТЬ 'want', and ДАТЬ 'give'. Students will also be introduced to verbs which always contain the particle -ся where it does not indicate reflexivity or passivity (such as УЛЫБАТЬСЯ 'smile' and УЧИТЬСЯ 'study'). Verb types which are less commonly encountered in the first year, such as the ПОНЯТЬ-type, will be presented only in certain commonly used forms. For example, the past tense form ПОНЯЛ(А) will be presented, since it is so useful for beginning learners of a language (ПОНЯЛ? Да, ПОНЯЛ. 'Understand? Yes, I get it.') But due to the lack of frequency of other forms of these words in the lexicon of the very beginning student, further discussion and exercising of these verb types will be left for later study. (See section 4.3.1 for more on word frequency.)

This textbook will aid students learning how to conjugate verbs by referring to distinct verb classes. Many existing textbooks present the two conjugation classes and leave making sense of the variations they perceive within those classes largely to the instructor and students (Clark, Kostomarov). Other textbooks provide a more principled approach to making sense of the verb system. For example, *Russian Alive!* divides verbs into classes. Unfortunately, the labels given to these classes are not very descriptive to the non-linguist. For example, "Conjugation 1b" refers to first

conjugation verbs which have a consonant change (relative to the infinitive) throughout the present tense conjugation. This group contains verbs like писать 'write' (я пишу, ты пишешь,...они пишут 'I write, you write...they write'). The label "Conjugation 1c" refers to verbs with end stress, like жить 'live' (я живу, ты живёшь,...они живут), while "Conjugation 1d" refers to verbs which contain -ова- or -ева- in the infinitive, but have -у- in the present tense, such as чувствовать 'feel' (я чувствую, ты чувствуешь,...они чувствуют.) While dividing verbs into these groups is useful, the labels (1b, 1c, 1d) attached to them appear very arbitrary to the non-linguist. More descriptive ones are needed.

Other textbooks use a stem-based system accompanied by rules to teach students verb conjugations. Some of these systems use a single stem, from which all verbs can be derived, while others use a two-stem system, in which the present tense and imperative forms can be derived from one stem, and the past tense and the infinitive from the other. The Lipson textbook, for example, uses a single-stem system to teach verbs, accompanied by a number of rules concerning the deletion of consonants and vowels at the junction between stem and ending. While this may work within the confines of the language classroom, it does not teach students to predict the forms of a verb based on the forms they will read or hear in the real world.

It seems more reasonable and natural to relate the forms of newly introduced verbs to those of verbs with which students are already familiar. The new textbook *Голоса* uses this approach to a certain extent. When the new verbs завтракать 'to eat breakfast,' обедать 'to eat lunch,' and ужинать 'to eat dinner' are presented in Lesson 5, the following explanation is given: "The verbs above all conjugate just like the verb читать, which you already know." That is, instead of referring to verb classes, it tells the student to relate these new verbs to what they already know.

The electronic textbook will use a similar relational technique to help students make sense of the Russian verb system. Each verb class will be referred to by a common verb belonging to that class. That is, first conjugation verbs of the -a- type will be referred to as ЧИТАТЬ-verbs, while verbs with the consonant change throughout the present tense will be called ПИСАТЬ-verbs. Mnemonic associations can be developed to help students remember which verbs share conjugations. For example, ГОТОВИТЬ 'prepare' is a ЛЮБИТЬ-type ('love') verb. Both verbs insert л before the first person singular ending: я люблю, but ты любишь,...они любят and я готовлю, ты готовишь...они готовят. These verbs can be mnemonically linked through a sentence like "I love (ЛЮБИТЬ) to cook (ГОТОВИТЬ)."

Below, the infinitives of the proposed representatives of each verb type are given. These representative verb are chosen for their degree of regularity, ease of visualization, short length, and frequency in the language. They will be the first verbs of each of their classes presented, so that verbs presented later can be related back to them.

Representative Verb	Gloss	Conjugation
ЧИТАТЬ	'read'	я читаю, ты читаешь,...они читают
ИДТИ	'go (on foot)'	я идё, ты идёшь,...они идёт
ПИСАТЬ	'write'	я пишу, ты пишешь,...они пишут
ТАНЦЕВАТЬ	'dance'	я танцую, ты танцуешь, они танцуют
УЛЫБНУТЬСЯ	'smile'	я улыбнусь, ты улыбнёшься, они улыбнутся (past: улыбнулся)

привы́кнуть	'become accustomed'	я привы́кну, ты привы́кнешь, ... они привы́кнут (past: привы́к)
пить	'drink'	я пью́, ты пьёшь, ...они пьют
мыть	'wash'	я мою́, ты моёшь, ...они моют
мочь	'be able'	я могу́, ты мо́жешь, ...они мо́гут
говори́ть	'speak'	я говори́ю, ты говори́шь, ...они говори́ят
смотре́ть	'look, watch'	я смотре́ю, ты смотре́ишь, ... они смотре́ят
люби́ть	'love'	я люблю́, ты люби́шь, ... они лю́бят
ви́деть	'see'	я ви́жу, ты ви́дишь, ...они ви́дят
лежа́ть	'lie (recline)'	я лежу́, ты лежи́шь, ...он лежа́т

Since verbs undergo consonant changes (such as *с* to *ш*, *д* or *з* to *ж*, and labial to labial plus *л*), students must also be made aware of the regularity of these types of changes. This will allow them to successfully group verbs like *но́с*и́ть 'carry' (я но́сю́, ты но́сишь, ...они но́сят) with шу́тить (я шу́чю́, ты шу́тишь, ...они шу́тят) and verbs like пи́сать (я пишю́, ты пишешь, ...они пишут) with сказа́ть (я скажу́, ты скажешь, ...они скажут).

Of course, the importance of the Conjugation I/Conjugation II opposition will still be emphasized. The difference is that a more organized approach to the subgroupings of these verbs within the conjugations will be taken.

4.1.2 Nominals

Given the structure of existing Russian textbooks, it appears to be generally agreed that first-year students of Russian should be exposed to all six cases and both the singular and plural of nominal forms². This includes presentations of nouns, adjectives, and personal, demonstrative and possessive pronouns. Students must learn to recognize and produce nouns of most common types in the six main cases (nominative, genitive, dative, accusative, instrumental and preposition) and both numbers (singular and plural). However, less commonly used cases (the locative and the partitive genitive) will be presented for recognition purposes only, and not necessarily for production on a large scale. Again, commonly use forms may be presented in isolation, as the content warrants. For example, the need for the partitive genitive will arise during the unit on food and restaurants in phrases such as Вам чаю? ‘Would you like some tea?’ Similarly, the locative form году (as in В 1996-ом году... ‘In the year 1996...’) will become necessary when dates are discussed. In addition, the exceptional forms два/две ‘two’ and оба/обе, ‘both’, which have exceptional forms and are marked for gender, will be presented and exercised at the appropriate time, due to their common use in the language. Attention will be brought to the more commonly used soft-stem long adjectives (such as синий ‘dark blue’ and последний ‘last’), but they will not be emphasized as a group due to their scarcity among the most common adjectives in the language. On the other hand, the proper use of short-form adjectives such as похож ‘resembles’ and здоров ‘health, well’ will be emphasized, presented, and exercised for production precisely because they are so commonly used.

²In fact, this is one of the criticisms often leveled against the Clark textbook. Many teachers find it difficult to cover the entire textbook in one year, and many would like to cover the book in three semesters of study. Ideally, then, they would only cover the first sixteen to twenty lessons in the first year. However, since the book covers important topics in later chapters (for example, the accusative, dative, prepositional and instrumental plurals are found in lessons 21 and 22), many instructors find this difficult to do.

Just as with the verbs, nominals will not be referred to with grammatical terms such as “hard-stem ” or “zero-ending,” because this jargon is generally understood only by linguists. Rather, each type of nominal will be referred to by a representative word. Again, this is not to say that no linguistic discussion at all will take place. Rather, reference to the various types of nominals will be made easier by using a common representative of the group which can be linked mnemonically to other words in its group. The list below gives the nouns and adjectives which will serve as representatives of their groups.

Representative noun/adjective	Gloss	Declination
студѐнт	‘student’	hard stem masculine animate
дóктор	‘doctor’	hard stem masculine animate with plural in -á
музѐй	‘museum’	soft stem masculine in -й
Евгѐний	‘Eugene’	soft stem masculine in -ий
портфѐль	‘briefcase’	soft stem masculine in -ь
америкáнец	‘American’	hard stem masculine with fleeting vowel
кни́га	‘book’	hard stem feminine
дѐвочка	‘girl’	hard stem feminine with fleeting vowel
земля́	‘Earth’	soft stem feminine
лѐкция	‘lesson, course’	soft stem feminine in -ия
дерѐвня	‘village’	soft stem feminine with fleeting vowel
дверь	‘door’	feminine in -ь
мать	‘mother’	special class with only two members
лицó	‘face’	hard stem neuter

окно́	‘window’	hard stem neuter with fleeting vowel
мо́ре	‘sea’	soft stem neuter
зда́ние	‘building’	soft stem neuter in -ие
и́мя	‘first name’	special neuter in -мя
ста́рый	‘old’	stem-stressed adjective
хоро́ший	‘good’	stem-stressed adjective with spelling rules
молодо́й	‘young’	end-stressed adjective
си́ний	‘dark blue’	soft stem adjective

There are other noun types which have not been mentioned here, because they are not necessary at the first-year level. Such forms include ПУТЬ ‘way’ (the only noun of its type) and nouns of the type ТЕЛЁНОК/ТЕЛЯТА ‘calf’.

Several other issues concerning adjectives must be addressed as well. Comparative and superlative forms of adjectives, including comparative constructions with and without чем ‘than’, must not be forgotten. Adverbs, which can be easily formed from adjectives, also must be addressed.

4.1.3 Other Parts of Speech

The following is a list of other forms and difficulties which must be addressed by the first-year Russian textbook.

- Proper use of the negations НЕ and НЕТ.
- Impersonal dative constructions, including those expressing need (надо/нужно), prohibition or permission (можно/нельзя), liking (нравиться), perceptions of reality, feeling and emotion (скучно ‘boring’, холодно ‘cold’, грустно ‘sad’, etc.) and age.

- Cardinal and ordinal numbers, with emphasis on the forms that students will use most often, such as those to express amounts of money, years, dates, etc.) This includes presentation of the genitive ordinals which are necessary for telling time, such as the genitive. This includes instruction and exercises using correct nominal forms after cardinal numbers.
- Expressing possession with У меня (есть) constructions.
- Use of simple subordinate clauses (Я знаю, что он русский 'I know that he is Russian'.) This includes the use of ли in indirect speech: (Ты знаешь, работает ли он на фабрике? 'Do you know if he works at the factory?')
- Use of relative clauses (Это книга, которую я написала. 'This is the book which I wrote.')
- Expressions and usages unfamiliar to or difficult for foreigners to differentiate:
 - и, а and но 'and, but'
 - долго and давно 'long time'
 - тоже and также 'also'
 - -то and -нибудь (as in что-то, что-нибудь 'something or other')
 - choosing between русский язык and по-русски after different verbs
 - знать 'know (something)' and уметь 'know (how)'
 - спрашивать/спросить 'ask (for information),' (по)просить 'ask (for something)' and задавать/задать вопрос 'ask a question'
 - words and cases expressing location and direction, including: куда 'where to'/где 'where at', сюда 'hither'/туда 'thither' and the use of the accusative case to express movement versus the prepositional to express being in one place

- the various verbs meaning 'teach' and 'learn' (УЧИТЬ, УЧИТЬСЯ, ПРЕПОДАВАТЬ, ЗАНИМАТЬСЯ, ИЗУЧАТЬ)
- the use of the anaphors СВОЙ 'one's own,' СЕБЯ 'oneself,' and ДРУГ ДРУГА 'each other' and the emphatic particle САМ '-self' (as in 'He himself...')

4.2 Sequencing of Materials

Just as important as which topics are presented in the first-year textbook is the order of their presentation. In this section, some major organizational points of the electronic textbook will be discussed.

4.2.1 Alphabet and Writing

Communicative teaching often stresses the development of listening and speaking skills before reading and writing skills, a pattern which parallels that of children learning their native language. This progression may not be appropriate for adults in general. Many adults are visual learners who are more comfortable with the visual presentation of information. In addition, adults have a mature cognitive style which allows them to organize and assimilate information in a manner in which children are not capable. This makes a different type of presentation not only possible, but necessary.

Russian presents an additional difficulty, however. Before students can begin to read and write in Russian, they must learn a new alphabet. If they do not begin to learn the Cyrillic alphabet right away, they are likely to develop their own Latin-based writing system for note-taking. Therefore, alphabet training as preparation for reading and writing must begin early in the Russian classroom, right alongside the development of speaking and listening skills. In addition, if they learn the Cyrillic alphabet early, they can be encouraged and expected to take notes using Cyrillic instead of Latin.

The Cyrillic alphabet need not be introduced in alphabetic order, nor must it be presented all at once. Letters can be divided into several groups on the basis of their familiarity to the speaker of English, and a new group may be presented every day, resulting in reasonable control of the reading and writing of the Cyrillic alphabet after the first week. A chart of the proposed presentation of the alphabet is given below. Note that the groupings are only approximate; just as important as difficulty level of the letters is that they are evenly spread through the days of introduction.

а, е, (ё), э, к, м,	Printed letters exist in both Latin and Cyrillic, although
о, с, т, у	correspondences of letter to sound may differ
в, д, и, (й), п, р,	Cursive letters familiar to English speakers, but
ш	representing different sounds than in English
б, г, л, н, х, ь, ы,	Letters unfamiliar to native English speaker, but not
э, ю	difficult to form
ж, ф, ц, ч, щ, ь,	Letters unfamiliar to English speaker and difficult to form
я	

Probably due to space and printing costs, most existing first-year Russian textbooks provide a limited amount of handwriting modeling and practice, with Clark being a notable exception. While the electronic textbook cannot evaluate student handwriting, it can provide a great deal of modeling material and demonstrate the formation of individual letters in a way that a paper textbook cannot. The paper textbook, being a static environment, can only present the strokes of each letter individually, using arrows and numbers to indicate how each letter is formed. However, the electronic textbook can present the formation of letters in a dynamic way,

drawing the letters on the screen stroke-by-stroke. A demonstration of this approach may be found in the demonstration “Handwriting” in the pocket materials.

Students will never need to write in cursive to complete computer-based exercises. However, they still need to know how to write in Russian. Therefore, the electronic textbook will also periodically provide worksheets which ask students to write in cursive, so that they can become and remain proficient in the skill of handwriting.

4.2.2. Presenting Topics

There is a delicate balance to be struck when introducing new concepts to language learners. It is important that students not be confused by the splintering of a single topic between too many sections of a textbook, but at the same time they must not be overwhelmed by the presentation of a large topic all at once. *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* is generally guilty of the former, while Clark’s *Russian* and *Russian Alive!* often do the latter. Many topics, such as the use of the dative case, are too large to be presented all at once and must be divided over several sections. However, caution must be used when dividing topics in this way; relevant materials previously covered should be reviewed before the new materials are presented. In addition, topics, once introduced, need to be used and reviewed on a regular basis, as was discussed in section 2.5.

As was discussed in section 1.5.5.1, when determining the sequencing of textbook materials, a balance must be struck between communicative, functional, and grammatical considerations. Different considerations must be taken into account at various points in the learning process. For example, in the earliest stages of the course, the focus must be on the communicative process of greeting people and finding out their names, but attention must also be paid to pronunciation and the rudiments of reading and

writing. It is not sufficient to concentrate on just one facet of language learning at any one time; students must learn to cope with a variety of learning challenges at once.

Some grammatical categories are so intricately linked to certain functional and communicative categories that introducing one necessarily entails introducing the other. For example, the introduction of impersonal dative constructions (such as Мне холодно 'I'm cold' or Ей интересно изучать математику 'Studying math is interesting to her') naturally entails an introduction of short form adjectives and adverbs. Similarly, the introduction of the conditional is virtually inseparable from talking about planning, wishing and fulfilled and unfulfilled expectations (Если бы у меня было много денег, я бы купила новый дом 'If I had a lot of money, I would buy a new house.') Therefore, grammatical topic of conditionals is best introduced simultaneously with the communicative topic of expectation.

Vocabulary may be related to grammatical and communicative functions in a similar way. For example, when discussing nationalities (канадец 'Canadian', американец 'American'), many nouns with fleeting vowels are presented. Therefore, the introduction to fleeting vowels should take place in the same lesson as discussions of nationality. This provides an opportunity for a preliminary discussion of this phenomenon in the accusative singular (канадца, американца) and nominative plural (канадцы, американцы). Similarly, the introduction of the instrumental case, both with and without prepositions, can easily be integrated with discussions of food, given the necessity of expressing concepts such as суп с мясом 'meat soup' or я ем суп ложкой 'I eat soup with a spoon.' Food is also linked to the use of the partitive genitive (стакан чаю 'glass of tea', я возьму сахару 'I take sugar.') Therefore, the elements in group of topics should be introduced together.

The chart below lists the grammar, vocabulary, communicative and cultural topics the textbook will present in the order it will present them. This presentation is based on the guidelines given above.

Grammar	Vocabulary	Communication and Culture
Basic writing and pronunciation	Basic greetings	- Saying hello and goodbye - Asking for repetition or clarifications
Nouns, nominative singular, gender	Basic identification (Как вас зовут? Кто вы по профессии? Где вы учитесь?)	Getting acquainted
Nominative plural, pronouns	- Families, friends, and neighbors - и, а and но 'and, but'	Telling about people you know
Prepositional case, first conjugation verbs	- The classroom - Some verbs meaning 'learn'	Where people and things are, what people do
Use of the accusative case to express movement versus the prepositional to express locus, use of the accusative with direct objects	- City life - words referring to location and direction: куда 'where to'/где 'where at', сюда 'hither'/туда 'thither'	Where people go in the city for work and recreation

Introduction to verbs of position	<ul style="list-style-type: none"> - Numbers in time (introduction), days of the week - должен - надо/нужно - лежать, стоять, сидеть 	Daily schedule
<ul style="list-style-type: none"> - Possessive pronouns - есть constructions - Introduction to genitive case 	<ul style="list-style-type: none"> - тоже and также 'also' - Preposition "у" - genitive case pronouns 	Expressing ownership
<ul style="list-style-type: none"> - Impersonal dative constructions - Dative case pronouns - Introduction to verbs with -ся 	<ul style="list-style-type: none"> - нравиться, хотеть - dative case pronouns - short form adjectives 	Expressing feelings, likes and dislikes
Past tense	<ul style="list-style-type: none"> - Nationalities and languages - Русский язык and по-русски 	

<ul style="list-style-type: none"> - Unprefixed verbs of motion - Accusative plural (animate and inanimate) - More on dative case 	<ul style="list-style-type: none"> - Homes - Visiting people - МОЧЬ - Telling time 	<ul style="list-style-type: none"> - Finding someone's apartment - Bringing gifts
<p>More on genitive case, including introduction to genitive plural</p>	<ul style="list-style-type: none"> - Numbers: more complicated time expressions, use with nouns, ordinals - Education: Schools and universities - Professions - ЗНАТЬ 'know (something)' and УМЕТЬ 'know (how)' 	<p>Teaching and learning</p>
<p>Perfectives</p>		<p>Tour of Moscow</p>
<p>Accusative and genitive plural</p>	<p>More number expressions</p>	<p>Tour of St. Petersburg</p>
<ul style="list-style-type: none"> - Future tense - More discussion of aspect 		

<ul style="list-style-type: none"> - Imperative mood - Dative plural 	<ul style="list-style-type: none"> - Small talk - спрашивать/ спросить 'ask (for information),' (по)просить 'ask (for something)' and задавать/ задать вопрос 'ask a question' - можно/ нельзя 	<ul style="list-style-type: none"> - Getting acquainted: conventions and good manners - Asking for and getting things and favors
Introduction to prefixed verbs of motion	Transportation	
More on prefixed verbs of motion	Clothing, colors	Packing for a trip
<ul style="list-style-type: none"> - Prepositional plural - Reflexive verbs 	Parts of the body	
<ul style="list-style-type: none"> - Short form adjectives - Anaphors - More about verbs of position 	<ul style="list-style-type: none"> - Medicine and health care - Anaphors свой 'one's own,' себя 'oneself,' and друг друга 'each other' - Emphatic particle сам '- self' (as in 'He himself...') 	

- Partitive genitive - Instrumental singular	Food	Cooking and eating
Instrumental plural	- Leisure time (entertainment) - -ТО and -НИБУДЬ (as in ЧТО-ТО, ЧТО- НИБУДЬ 'something or other')	Going out
Conditionals	- Holidays and special occasions - Age, months, seasons - ДОЛГО and ДАВНО 'long time'	Thinking about the future

One notable detail of the above presentation should be mentioned. The concept of aspect is introduced relatively early on, after the past tense, but before the future tense. This allows students to become familiar with the seminal idea of aspect (that is, emphasis on the completion of an act versus no emphasis on that result) without confounding this concept with tense. This stands in stark contrast to the timing of the presentation of aspect in all the textbooks examined for this dissertation. In existing textbooks, the perfective aspect is introduced at the same time as the future tense. (The exception to this rule is the Lipson text, where the future tense of imperfective verbs is presented before aspect is ever discussed.) It would seem perfectly logical to introduce the perfective aspect concurrently with the future tense, since the conjugated forms of perfective verbs express future tense. But students can just as easily learn the past tense

forms of perfective verbs and be told that there are no present tense forms of these verbs. This explanation may discourage them from conjugating perfective verbs and trying to use them for the present tense. Later, when the future tense is presented, the notion of aspect will already be familiar to them and the addition of the concept of aspect in the future tense should be less problematic. This order of presentation lets students become familiar with the confusing business of aspect using the rather simply constructed forms of the past tense, rather than introducing them to a great number of unfamiliar conjugation types at the same time as the concept of aspect.

4.3 Vocabulary

While it is clear that textbooks must present vocabulary, the parameters are unclear. First of all, it must be determined how many words students should learn. Then it must be decided which words those should be. Some vocabulary may be presented for active use, while other words may be introduced for passive recognition only, increasing the total number of words presented. The textbook must also teach vocabulary building skills, such as predicting meaning both from context and from known word parts and the proper usage of dictionaries, whether paper-based or on-line. Finally, presentations and exercises which help students learn, exercise, and retain vocabulary must be developed. A number of computer-based approaches to learning vocabulary already exist, and the positive and negative qualities of these approaches will be discussed in this section.

4.3.1 Amount of Vocabulary

Learning a substantial amount of vocabulary is generally important to students. They feel, justifiably, that the grammar is not useful if they do not have the vocabulary to use it with. (Oxford & Scarcella, 1994) But at the same time, the amount of vocabulary to learn must be kept to a manageable level to avoid overwhelming students.

A glance at existing Russian textbooks reveals great variation in the amount of vocabulary presented. The Clark *Russian* book, considered by many to contain too much vocabulary, presents at least sixty words in each lesson; some of its lessons present more than 100 words; *Начало* and *Голоса* present a similar number of words, about 84 and 90 words per lesson, respectively. By contrast, *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* averages about 25 new words in each of its forty lessons. *Face to Face* contains about half that, with about 30 words in each of its 20 lessons. There seems to be no consensus, then, about the number of words students should learn, and the research literature does not provide much guidance.

Whether we accept a number limit for the amount of vocabulary items presented, one thing is certain: the lexicon should be limited to that which is relevant and necessary to the topics at hand (Benevento, 1984; Carrell, 1988). It is probably reasonable to expect students to have active knowledge of one thousand words at the end of the first-year (including pronouns, prepositions, cognates, and other rather easily learned words). It also seems reasonable to expose students to another 500 words for passive recognition and for work on guessing meaning.

A minimum basic vocabulary allows students to understand and to make themselves understood (Eskey & Grabe, 1988). (See section 4.6.1 for a discussion of the relevant research on this.) When readers automatically recognize a great number of words in a text, they do not have to use all their cognitive power for decoding. Instead, they can devote more of their minds to higher-level mental processes, such as understanding the text. If readers' vocabularies are too limited, and they spend too much mental energy on decoding, the whole of the text may be no more well understood than the individual words would be. (Cooper, 1984) Therefore, we must teach our

beginning language learners a certain amount of “sight” vocabulary which is generally useful in the majority of texts they will encounter.

4.3.1.1 Frequency Lists and Core Vocabulary

Bragger (1985) feels that students should be encouraged to discover the vocabulary which they find personally useful through asking teachers or other students or by consulting dictionaries. A computer-based textbook could accommodate this sort of approach well; students could choose words they want to learn and the computer could create exercises from those personalized word lists. However, such an approach would limit classroom communication, since no two students would have the same active vocabulary. Another problem with this approach is that it requires the instructor to answer a great number individual vocabulary questions or for students to look them up in dictionaries. And as is well known, students are often misled by dictionaries, which provide definitions which they do not wholly understand, which then leads them to misuse the words they look up. While a well-constructed on-line dictionary can help alleviate some of these problems, the worry still remains. After all, a word on a student’s personal vocabulary list will be used in class only in the sentences produced by the student; input is most likely limited to whatever exercises the computer has pre-stored for that word. If no exercises are available, it would be up to the instructor to provide them. Thus, instructors might find themselves creating a large number of personalized exercises.

It would seem reasonable to select words for active learning from frequency lists (Decoo, 1993; Lessard, 1986). We cannot be satisfied with just one frequency list, however, since these lists are compiled in different ways. Appendix B summarizes portions of three word count studies. This list was compiled by taking between the most common 1,001 to 1,133 words from each of three frequency count lists, and then

comparing them to see which words occurred most often. The three lists which were used were Lönngren (1993), Zazorina (1977) and Shteinfeldt (1965). Two of these lists, (Zazorina and Shteinfeldt) are biased towards everyday spoken language, while the later Lönngren work leans towards written prose instead.

Shteinfeldt's *Russian Word Count* was created from texts containing a total of 400,000 words. Fiction for adults and children, plays, periodical articles and transcripts of radio broadcasts for young people comprised the texts from which the vocabulary was taken. The broadcasts and the texts from periodicals date from 1956-1960. As Lönngren notes, the selection of texts biases this lexicon of 2,500 words towards casual and spoken language. 1,133 words, chosen for their range across the texts comprising the corpus as well as their overall frequency in the corpus, were used to compile the list in Appendix B.

The *Частотный словарь русского языка* edited by Zazorina (1977) was based on one million words. The words came from a corpus nearly evenly divided among literary prose, plays, scientific and journalistic texts, and newspaper and magazine texts. These texts date from an earlier period (through 1969) and include the writings of Lenin and Gor'kij. 1,001 words from this list were used in the compilation of the list in Appendix B.

Lönngren's *Частотный словарь современного русского языка* draws from texts from books, magazines and newspapers, all of which were published after 1960. The texts did not include poetry, specialized scientific texts, texts translated from other languages, or texts published outside the Soviet Union, unlike some of the texts used to compile the other lists. Half the texts were literary, the other half were not. The literary texts used were published no earlier than 1960, the magazine texts no earlier

than 1985, and the newspaper articles no earlier than 1987. 1,082 words from this corpus were used.

When consulting frequency lists, we must consider how the words were counted and from what sorts of texts they were taken. Decoo (1993) outlines one way in which words should be counted for use in textbook presentation. Words which have separate and not fully predictable forms for each gender (like *учительница* and *учитель* 'teacher') should be counted as separate words. Other lexically related words, such as *начало* 'beginning' and *начать* 'begin' and suppletive forms such as the noun plurals *ребёнок/дети* 'child/children' and the verb forms *идёт/шёл* '(he) goes/(he) went' must also be listed separately. In addition, idiomatic expressions (such as *Слава Богу* 'Thank God', *Боже мой* 'My God', *господи* 'Oh, Lord') should be counted separately from their component forms. On the other hand, regularly inflected forms can be counted along with their dictionary forms. That is, the masculine singular forms of *мой* 'my,' are predictable and similar to adjective forms: *моего, моему, моего/мой, моим, моём*. However, the forms of *я* 'I' are not predictable: *меня, мне, меня, мной, мне*. The forms of *я* must therefore all be counted separately, while the forms of *мой* can be represented by the dictionary form only.

Each one of the frequency count lists follows or violates these guidelines to different extents. Of the three frequency lists used here, the Shteinfeldt list violates Decoo's guidelines most often: it lists unpredictable forms such as *он* 'he' and *его* 'him' under *он, она* 'she' and *её* 'her' under *она* and separates the particles such as *-то, -нибудь, and -таки* from their interrogative words, listing them separately. Thus, while Lönngren and Zsorina both list forms such as *что-то* 'something or other', *кто-то* 'someone or other', *как-то* 'somehow or other', *какой-нибудь*

'some kind of X or another' and всё-таки 'for all that', Shteinfeldt lists the words что 'what', кто 'who', как 'how', какой 'which kind', and всё 'all' separately from the particles which attach to them. It appears that all the frequency lists divided idiomatic expressions into their component words: thus, words like мера 'measure' were counted separated from expressions such as по крайней мере 'at least', в меру 'to the extent of', etc. So the word мера turns out to be a high frequency word, although it rarely occurs outside the context of a few commonly used idiomatic expressions.

Of the 1,659 unique words used to compile Appendix B, 649 occur in all three lists, another 330 occur in two lists, and the remainder appear in only one list. The electronic textbook will ensure the presentation of the majority of the 979 words found in at least two lists.³ Appendix B lists only the 979 words which occurred in two of the three lists.

Unfortunately, these 979 words provide an insufficient basis for the lexicon of a beginning textbook. This is because certain semantic and grammatical classes are not fully represented in this list. For example, the list contains the most commonly used numbers: один (1), through десять (10), двенадцать (12), пятьдесят (50), шестьдесят (60), девятсот (90) and тысяча (1,000). Certainly we want to fill in the rest of the numbers to form a complete class. In addition, while the pronouns я, ты, он, она, оно, мы, вы, они, его, её, and их appear in the Appendix B list, none of the pronouns in oblique cases do. These must be provided as well. When all such obvious gaps are filled, we will have well above 1,000 words.

³Some of these words, such as those associated with the Soviet era are no longer in common usage and need only be presented for passive knowledge. These words include товарищ 'comrade', колхоз 'collective farm' and пионер 'pioneer'.

However, ensuring that the words in Appendix B are incorporated into the electronic textbook will not be problematic, precisely because they are so common and necessary. They appear so often in authentic texts and can be so easily incorporated into pedagogical ones that presenting them all on a regular basis will not pose a difficulty.

4.3.1.2 Other Necessary Vocabulary

A great number of vocabulary items which do not appear in the frequency list are of great use to beginning students of Russian. In fact, in order to discuss the topics presented in section 4.2.2, a large amount of additional vocabulary must be presented. Below is a short synopsis of the types of additional vocabulary.

Basic greetings:	Greeting (здравствуй(те) 'hello', привет 'hi'), leave-taking (до свидания 'good-bye', до скорого 'see you soon'), getting acquainted (Как вас зовут? 'What is your name?'), polite questions (Как дела? 'How are things?')
Family, friends and neighbors:	Members (мать 'mother', брат 'brother', бабушка 'grandmother', друг 'friend', приятель 'acquaintance,' сосед 'neighbor'), first names (Наталья 'Natalya', Иван 'Ivan'), short names and nicknames (Наташа 'Natasha', Ваня 'Vanya'), patronymics, last names

Schools and universities:	Teachers and students at various levels (преподаватель 'teacher', профессор 'professor', студент 'student', ученик 'pupil') names of educational institutions (школа 'school', университет 'university'), campus buildings (библиотека 'library', столовая 'cafeteria'), classroom objects (стол 'table', стул 'chair', мел 'chalk', доска 'blackboard', карандаш 'pencil')
Transportation:	Modes of transport (автобус 'bus', поезд 'train', самолёт 'airplane'), waiting for transportation (остановка '(bus) stop', станция 'station', аэропорт 'airport'), motion verbs (идти/ходить 'go (by foot)', ехать/ездить 'go (by vehicle)', лететь/летать 'fly', входить/войти 'enter', выходить/выйти 'exit')
Clothing:	Articles of clothing (рубашка 'shirt', платье 'dress', майка 't-shirt', шляпа 'hat', очки 'glasses'), associated verbs (одевать(ся)/одеть(ся) 'dress', раздевать(ся)/раздеть(ся) 'undress')
Colors:	Color names (красный 'red', зелёный 'green', голубой 'light blue'), modifiers (светло- 'light', темно- 'dark')
The Body:	Appendages (голова 'head', ухо/уши 'ear', рука 'hand/arm'), internal organs (сердце 'heart', живот 'stomach')

Medicine and health care:	Professionals (врач 'doctor', медсестра 'nurse'), locations (больница 'hospital', поликлиника 'polyclinic'), illnesses and symptoms (грипп 'flu', температура 'temperature'), associated verbs (болеть (болеет 'be sick', болит 'hurt'), чувствовать себя 'feel'), adjectives (болен 'sick', больной 'sickly', здоров 'healthy')
Food:	Meals (завтрак 'breakfast', обед 'lunch', ужин 'dinner'), ingredients (мясо 'meat', сыр 'cheese', овощи 'vegetables', икра 'caviar'), drinks (молоко 'milk', вода 'water', водка 'vodka'), dishes (блины 'pancakes', пирожки 'piroshki', пельмени 'pelmeni', салат 'salad'), where to buy (булочная 'bakery', рынок 'farmers' market', мясо 'butcher shop'), utensils (ложка 'spoon', тарелка 'plate', кастрюля 'casserole'), associated verbs (готовить 'cook', есть 'eat', пить 'drink')
Leisure time:	Places to relax (парк 'park', кино 'movie theater', концерт 'concert', ресторан 'restaurant', стадион 'stadium'), games (шахматы 'chess', карты 'cards'), sports (футбол 'soccer', хоккей 'hockey', кататься на лыжах 'skiing')
The Arts:	Locations (театр 'theater', балет 'ballet', опера 'opera', музей 'museum'), different types of art (литература 'literature', музыка 'music', скульптура 'sculpture'), people who create art (художник 'artist', поэт 'poet'), units of art (песня 'song', пьеса 'play'), tools of the trade (рояль 'piano'), creating art (танцевать 'dance', играть 'play')

Holidays and special occasions:	Special days (день рождения 'birthday', новый год 'New Year's', 8-ого марта 'Women's Day'), gifts (подарок 'gift', цветы 'flowers'), other associated objects (ёлка (holiday evergreen tree), торт 'cake')
Time:	Days of the week, months of the year, time relative to now (прошлый 'last', будущий 'next'), associated adjectives (через, за, до)

4.3.1.3 Words of a Semantic Group

One way of organizing vocabulary is presenting all the words of a semantic group at the same time (parts of the body, clothing, colors, etc.) While Carrell (1988) feels that learning vocabulary by topic can aid retention while broadening background knowledge, Decoo fears that too much emphasis on this sort of presentation can cause confusion between certain words. One reason for this is that it is hard to present related words in a number of different contexts:

“an example sentence like *il a mal à la gorge* [‘he has a sore throat’] will not help the learner understand *gorge* [‘throat’] if the word is part of a series introducing fifteen other words for parts of the body, which all can hurt.” (Decoo, 1993, p. 132)

Therefore, it may be better to introduce a just few new words of each semantic field at one time. Then the student “is always able to function *in all fields*, first on a very elementary level, then on a somewhat more expanded level.” (Decoo, p. 133)

Thus, it is reasonable to present the student with the most commonly occurring words of a semantic class first. For example, while ТЁТЯ ‘aunt’ and ДЯДЯ ‘uncle’ are family members, there is no need to present these vocabulary items at the very beginning

of the course when the members of the nuclear family are presented. That is, the most commonly used members of each group (according to Appendix B) may be introduced first, and others presented as reading and listening texts require. As another example, students might first learn the parts of the body found in all three lists of Appendix B: ГОЛОВА 'head', НОС 'nose', НОГА 'foot/leg', РУКА 'hand/arm', ПАЛЕЦ 'finger' and СЕРДЦЕ 'heart'. Then the words appearing in two lists comprising the master frequency list could be presented (ТЕЛО 'body', ГУБА 'lip', ЗУБ 'tooth', ВОЛОС 'hair'). Finally, the words which did not occur on more than one of the three frequency lists, but which may be of use to students (such as ЖИВОТ/ЖЕЛУДОК 'stomach', РОТ 'mouth', ГОРЛО 'throat', ЛОКОТЬ 'elbow', ПЛЕЧО 'shoulder', КОЛЕНО 'knee', and ГРУДЬ 'chest'), could be introduced as students need them. Each time new words of the semantic class are presented, the words of that class which the student has already learned should be reviewed. This can serve as an advance organizer, stimulating students to use what they already know as they incorporate the new information.

4.3.2 Individual Learner Strengths

Students display individual strengths and weaknesses in the way they learn, as was discussed in section 1.6.1. The strengths can be exploited to boost learning and confidence. On the other hand, the areas of weakness can be addressed and strengthened. This section will address the use of pictures in vocabulary presentation and the effects of presenting words of varying lengths as a memory aid.

4.3.2.1 Easily Learned Words

Levenston (1979, as cited in Cohen 1991) gives empirical evidence that learners prefer learning words which are:

- (1) easy to pronounce
- (2) morphologically regular (i.e. without irregular inflections)

- (3) syntactically clear
- (4) equivalent in meaning to words in the native language (or in some other language that the learner knows)
- (5) occurring frequently in speech or in writing
- (6) generalizable to various contexts
- (7) semantically simple (not having multiple meanings, particularly when such meanings seem unreasonable). (Cohen, 1991, p. 114)

In other words, if target language words are familiar, students will be more willing to accept them and learn them more easily, because they can be more easily related to what they already know.

Cohen describes the responses of language learners to a questionnaire in a study conducted by Cohen & Apeh (1979) about the sorts of associations they make to remember target words.

“...at least the following types of associations were being used in second language learning: (1) noting the structure of part of the word (e.g. the root or an affix) or all of it; (2) linking the word to the sound of a word in the native language, to the sound of a word in the language being learned, or to the sound of a word in another language; (3) attending to the meaning of a part or several parts of the word; (4) creating a mental image of the word; (5) linking the word to the situation in which it appears; (6) placing the word in the topic group in which it belongs; (7) associating some physical sensation to the word; (8) visualising the word in isolation or in a written context. Learner often use combinations of these types of associations.” (Cohen, 1991, p. 114-115)

In Proechel's *Shto-what and the Seven Devushki* (1982), a fairy tale aimed at American children learning Russian, the story gives mnemonics in highly visual, unforgettable

contexts. Children learn to say “orange juice” (АПЕЛЬСИННЫЙ СОК) by associating it with a cow which gives milk which tastes like orange juice; the cow’s name is Apple-Sun-or-Soak, so named because she will go out and forage for apples in any weather. The electronic textbook will present mnemonic devices and also encourage learners to develop them on their own. (The strengths of mnemonics as a tool for vocabulary learning were discussed in detail in section 1.2.2.)

4.3.2.2 Easily Confused Words

Wiesendanger & Bader (1987) conducted a study to determine whether easily confused words should be taught together or separately. They found that if each word of a pair of commonly confused words is learned thoroughly before the two are brought into contact, learners later confounded them less often. This finding stands in stark contrast to much traditional practice. It has often been thought that similar and easily-confused words should be taught together early on, so that learners will be sensitive to the problems they present. For example, ДОЛГО and ДАВНО ‘long time’ are usually presented in the same or adjacent lessons. However, this research would suggest that one be taught, and thoroughly learned, before the other is introduced.

Decoo asserts that learnability is enhanced when words of various lengths are presented during each unit. That is, if all the words in a unit have similar shapes (length, number of syllables, first letter), students will experience difficulty differentiating between them in the early stages and therefore have trouble incorporating them into the mental lexicon. If words of different lengths and shapes are presented, however, students will have an easier time learning them. Other research supports this: Lessard (1996) suggests that visual or auditory properties, such as the number of syllables in the word or the first letter, may be important to the structuring of the mental lexicon, and Goodfellow (1993) asserts learners may also show the tendency to

remember the first or last syllables of words. The electronic textbook will take advantage of these facts in presenting new vocabulary to students. For example, word pairs such as стол 'table' and стул 'chair', красивый 'beautiful' and красный 'red', and уже 'already' and ещё 'still' should be taught separately to avoid confusion. However, dissimilar-yet-related words such as ручка 'pen' and карандаш 'pencil', дом 'house' and квартира 'apartment', and кошка 'cat' and мышь 'mouse' can be presented at the same time without confusing the learner.

Since people remember words to which they have been exposed most often, frequent presentation of the target words will help their memories as well (Oxford & Scarcella, 1994). Thus, the electronic textbook will be designed to review words often, giving special emphasis to items with which students show weakness. Care must also be taken to review words in all their forms (Decoo, 1993). Some textbooks fail badly in this regard; for example, a book may use the third-person plural form of a verb very regularly, but the first-person plural form hardly at all. The computer can "remember" the words with which a learner has recently struggled (spelled incorrectly, misunderstood, looked up in the on-line dictionary) and reintroduce them as necessary. Students can also indicate which words they are having trouble remembering, as well as syntactic and semantic information that has helped them recall specific items in the past (Goodfellow, 1993; Clarke, 1993).

4.3.2.3 Auditory Learners and the Visual Stimulus

Pouwels (1992) suggests that students who show strength in the visual modality are more drawn to language study, because it is easier for them. In his research, Pouwels found that visual aids--such as pictures accompanying the words which students are supposed to learn--help some students more than others. Pouwels used the Swassing-Barbe Modality Index to divide students into visual, auditory, and parity

(equal strength with respect to visual and auditory faculties) groups. In his study, he found that students who are predisposed to visual learning can be aided by pictorial aids. Students whose visual and auditory learning strengths are basically equal seem to benefit from the use of pictures as well. As mentioned in section 3.3.2.1, Kale and Grosslight (1955) also found that the use of pictures and text together facilitated the retention and relearning of vocabulary; however, their subjects were only asked to recognize and produce written words, not spoken ones.

On the basis of this research, it would seem that visual aids are generally helpful for learning target-language vocabulary. However, Pouwels also notes that the use of accompanying pictures may hinder the learning of vocabulary words among auditory learners (29% of the students in his study), who may find pictures distracting and unhelpful. It is possible that visual information, which is harder for auditory learners to process, causes cognitive overload for them. If this is so, then the auditory signal accompanied by just a picture or just the text would be more helpful to such learners.

Since the electronic textbook is flexible, the presentation can be varied for each student. Thus, students who feel that seeing pictures and text helps them learn words can choose to see them, while other learners will opt to just hear the word. The strength of the computer is that students can experiment with different learning techniques and choose the method which helps them the most.

4.3.3 Guessing Strategies

The computer itself can lend new possibilities to vocabulary learning. Although the most obvious of these is the on-line dictionary, students should be encouraged to learn vocabulary via other methods as well. In fact, providing an easy-to-use dictionary alone may do students a disservice, since it does not challenge them to develop these skills for guessing in context. Therefore, the electronic textbook will provide not only

the convenience of a dictionary and instruction in its proper use, but will also provide a framework for developing vocabulary learning and guessing strategies.

4.3.3.1 On-line Dictionaries

Traditionally, students have looked up unknown words in dictionaries or glossaries, and this task is very time consuming and frustrating. So when computers first became available, many language instructors saw them primarily as a quicker, more convenient and more accurate method of accessing dictionaries. After all, if students can look up unknown words quickly, it is reasoned, they are less likely to lose their place in the material they are reading. Reading thus becomes a more pleasant experience, one in which students will be more likely to willingly engage.

Chan & Liu point out that on-line dictionaries can relieve the burden on short-term memory, as well as allow students more cognitive power for higher-level decoding activities such as deciphering syntactic and semantic text clues. When students click on a Chinese word in Chan & Liu's interactive reading environment, for example, they hear the pronunciation of the word and can see grammar rules and examples of the word in context.

Lessard (1986) suggests that on-line dictionary entries should contain more than just a gloss. At the very least, they should contain information about gender and inflectional type. In "Venturereader" (described by Fox, 1990), readers invited to either guess the meaning of the word or consult the lexical database for more information. The database may include other uses of the word in context, as well as synonyms, antonyms, definitions and other information. Lessard and Fox both suggest that semantic frames, such as the prepositions and cases associated with the word, should also be included.

Lessard also suggests including information on derivational affixes in on-line lexical resources. For Russian, information about the use of common prefixes such as по-, пере-, при-, до- etc. and derivational suffixes such as -ник, -тель, and -(е)ск would be contained in glossary entries. Learner understanding of such derived forms can even be tested with multiple choice questions. The program “Word Perfect” employs such an approach, providing sense relations, such as synonyms, antonyms, and hyponyms, as well as definitions, context, and word class information (noun, verb, adjective, etc.) as part of the dictionary.

Such advanced lexicon study is not appropriate for beginning students of Russian; it becomes feasible only late in the first year of Russian language study. If implemented before that, it could cause cognitive overload in some students. In the long run, however, such an approach to the lexicon will help make the student more aware of the intricacies of word usage and more sensitive to the importance of syntactic structure (Sharwood Smith, 1988a).

4.3.3.2 Learning to Guess

Ideally, we would like to help our students to move away from constant dictionary use. On-line dictionaries, properly designed, can empower students and help them develop investigative strategies (Goodfellow, 1993). Such dictionaries differ from the traditional type in that they do not immediately give a gloss in the native language or another kind of definition for unknown words. Instead, it helps them to decode meaning through the context and morphology. Based on this analysis, the student chooses a correct definition or gloss from a list of multiple choice answers. In other words, on-line dictionaries must be interactive, as suggested by Wyatt (1984), and they should be designed to promote guessing strategies.

The computer can be used to teach appropriate vocabulary strategies, such as guessing word meaning from context. It can guide students to break the words they read into their parts and guide students to determine parts of speech from looking at inflectional endings. For example, students should learn that if a word ends in -л, -ла, -ло, or -ли, it is likely to be a verb in the past tense. They also need to know that short, unstressed words are often prepositions, and that words immediately following them are nominal or adjectival forms, also identifiable by their endings. The computer can be used to point students towards these guessing strategies before allowing them to look at a dictionary entry.

Learners can also be taught to identify roots, affixes and suffixes within longer words. As Wyatt (1984) points out, "Affixation and its associated spelling changes can be very effectively introduced using the dynamic capabilities of the video screen" (p. 398). Let us consider an object such as the зубная щётка 'toothbrush'. A learner who already knows the word зуб should be able to determine that this unknown word has something to do with teeth. The computer could highlight this part of the word to draw the student's attention to it. Alternatively, the computer could highlight the last two letters of зубная, attracting attention to it and helping the student determine that this word is an adjective. The computer can also encourage the student to look at words in the context either within or outside the sentence. Hints could be given in the form of sentences containing related words: "Вы чистите зубы зубной щёткой" 'You brush your teeth with a зубная щётка' or "Вы употребляете зубную щётку утром и ночью." "You use a зубная щётка in the morning and at night." Finally, relevant pictures can be presented.

This process might seem rather long. After all, all the student really wants to know is that зубная щётка means 'toothbrush'. Why should the learner go

through all this effort, for the meaning of just one word? The reason is that when the student is listening to a conversation or reading a newspaper in the real world, meanings are not obtainable through the click of a mouse button. Using language means guessing, making approximations, and learning to use the available information to discover things about the unknown. Students who learn to guess from context are gaining a skill which they can use in the real world.

Hosenfeld (1984) describes research with non-proficient readers who were taught new ways of approaching texts. They were taught to use not only known words, context and grammar in their reading, but also their knowledge of the real world and cognates, and their skills improved. We must exploit this innate ability of our students to use inference and prediction in the learning process (Chittravelu 1980, cited in Cooper 1984) and encourage them to use context of all kinds to make sense of what they are reading without resorting to dictionaries (Eskey & Grabe, 1988). Thus, materials can encourage students to use hints available in the larger context by not putting too much emphasis on small details (Johns 1979, cited in Cooper 1984). One existing Russian textbook (*Начало*) requires students to guess words which they should be able to decipher, such as cognates. Such easily decipherable words are marked with daggers and are not glossed in the margins of the reading texts, while words which students could not be reasonably asked to guess are glossed

It has been found that students prefer to see usage examples in dictionary entries (Cumming, Cropp, & Sussex, 1994). This is something which is virtually never provided in traditional textbook glossaries and dictionaries intended for students of the language due to lack of space. The computer is not limited in this way, and, as mentioned above, can make available other visual and aural aids as well

4.3.4 Interrelating Words

Unknown words can be related to known words using synonyms, antonyms, hypernyms, and hyperonyms (Carrell, 1988; from Pearson & Johnson, 1978). In addition, definitions in context may be used. Such tactics can be implemented in exercises which help learners build associations between individual words.

In the following matching exercise, learners must match the given word with one from a list. For example, students may be asked to choose the synonym, antonym, hyponym, or hyperonym from the list. Word families, emphasizing pairs or groups of words such as truth/truthful, need/needy, may be exercised in this manner as well (Fox, 1984).

“drag	downward
outward	forward
inward	life

From the six words or expressions above, type in the opposite for the following: upward” (Fox, 1984)

The following examples ask the student to choose the correct hyponym or hyperonym in a multiple choice format:

“When he arrived at work he found that he had left behind his chisels and all his other....”


1 vehicles 2 tools 3 containers 4 papers

When he arrived at work he found that he had left behind his...and all his other tools.

1 sandwiches 2 bicycles 3 invoices 4 chisels”

(Higgins & Johns, 1984, pp. 112-113)

Pictures can be used instead of words in some cases.

What is this flower with the thorns? 

A rose. (Adapted from Lessard, 1986, 100.)

One can illustrate antonyms either in the ways given above, or in sentences which use pairs of antonyms:

There are more things to **admire** than to **despise** about mankind. (Lessard, 1986, p. 101)

Analogy exercises can also be used. Plaister (1981) gives many examples of analogy types. These include synonym and antonym relations as well as relations illustrating cause and effect, parts and wholes, actions and objects.

Cause and Effect Relationship

- RACE:FATIGUE:: (A) track:athlete
 (B) ant:bug
 (C) fast:hunger
 (D) hand:clock

Object to Action Relationship

- STEAK:BROIL:: (A) bread:bake
 (B) food:sell
 (C) wine:pour
 (D) ~~sugar:spill (Plaister, 1981, p.26)~~

In exercises such as these, students can learn to classify relationships, using complementary terms single/married, male/female, or open/shut. Students who have trouble solving such problems could get more help by seeing these words in context. Holmes (1980) discusses a computer-based contextualized vocabulary drill for French, in which students must fill in an appropriate vocabulary word according to the context.

Leur _____ au Mexique fut un vrai désastre. Le lendemain du mariage, Jean fut atteint d'une maladie contagieuse et dut se faire hospitaliser.

(‘Their _____ in Mexico was a real disaster. The day after the wedding, Jean came down with a contagious disease and had to be hospitalized.’)

(Correct answer: *lune de miel*, ‘honeymoon’)

Two-part answers, such as the antonym pair ‘despise/admire’ illustrated above, can be exercised in this manner, encouraging the students to use context in a cloze-type exercise.

The sorts of exercises illustrated above will be used in the electronic textbook to reinforce vocabulary in context after the student has already made an effort at learning it using mnemonic techniques.

4.3.5 Vocabulary Exercises

Braun & Mulford (1987) describe a system where students choose whether to study their vocabulary lists through a picture, audio, or word-arrangement format. Each approach benefits different groups of students depending on learning style. Students can experiment with the use of these various techniques and select the ones that address their own learning styles.

In the picture approach, the student sees a picture representing the word and responds by filling the correct word into a short sentence provided by the computer. Students can choose to see the ~~gloss of the target word~~ or successive letters of the targeted word if they desire. Words which the student misses are marked for later review. The main strength of this approach is that the student learns to associate words not with their “equivalents” in the native language, but rather with pictures. Such an approach would be suitable for a learner whose cognitive strengths are in the visual realm.

The second approach is more suited to learners with aural learning strengths. Students listen to each target word in a sentence. The sentence is then shown on the

screen with the target word missing. The student must then supply the necessary word. If students need extra help, they can choose to view the correct word one letter at a time or hear the sentence again. Additional sentences are available for those who need further remediation, but are not shown to those who enter the word correctly in the first two sentences presented.

In the word-arrangement approach (similar to the approach known as the spatial-arrangement mnemonic, as discussed by Bellezza, 1983), students arrange on the computer screen a group of native-language words and their target-language equivalents in a manner that makes sense to them. For example, if students are to learn some parts of the body, they might arrange the words roughly in the shape of a human body:

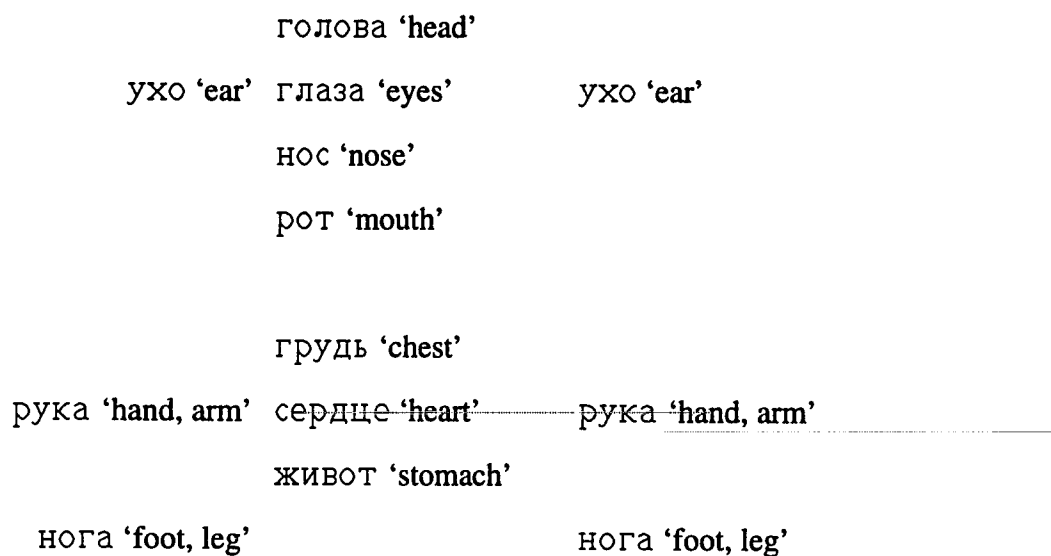


FIGURE 2: The Spatial Arrangement Mnemonic

Then the computer puts the native-language words on the screen in the same arrangement, leaving the student to type in the corresponding target-language words in order to make the native-language equivalents disappear. That is, the students use the

native-language cues as well as their spatial arrangement to remember each word in the target language. Finally, the computer gives blank lines arranged in the same pattern, and the students must type in the target language words in their correct places. In this final case, students can see hints (the first and last letters of each word) if they need help. This sort of exercise provides the type of contextualization which would be of particular use to certain visually-oriented learners.

In all three exercise types, words are contextualized, promoting communicative learning. The types of context, however, vary: the picture approach provides a visual context, the aural approach gives a sentence context, and the word-arrangement method helps the learner form spatial links. In all three exercise types, the student takes a quiz on the same groups of words two days later. Records are kept of the words with which students had trouble and these are recalled for review at a later time.

Another type of visually-oriented vocabulary exercise, one in the communicative style, is described by Magnan (1985, cited in Ariew, 1987). Given a picture of a room, for example, students can be asked to identify what is in the room as well as what is not in the room. Students could also complete a paragraph based on the information in a picture or video; they could fill in verbs, nouns and adjectives describing the events they see. To make the activity even more gamelike, one could couch it in terms of a mystery or crime story.

Some exercises can be used in conjunction with the information in the on-line dictionary. Test-like exercises, such as multiple choice and fill in the blanks, evaluate the students' knowledge (Clarke, 1993). An exercise described by Grellet (1981) teaches students about word formation with affixes. In this exercise, students must locate words in a text which have the same affixes as those in a separate list. A related exercise

(also described by Grellet) asks students to study a text for proper names, nouns, verbs, adverbs and adjectives which share a common root.

4.3.6 Vocabulary Summary

Vocabulary learning cannot be ignored in language education. Students should not be left to their own devices to try to learn vocabulary; most likely they will try to do learn words out of context, memorizing words through flashcards and lists. This memorization may not allow them to use the words they learn in conversation. However, this does not mean that vocabulary learning must take place in the classroom. Using the electronic textbook, students can be made responsible for their own vocabulary learning, but still receive appropriate guidance. The presentations and exercises will provide proper context for vocabulary learning, so that words are not memorized in isolation.

4.4 Grammar

While it is very important that students learn vocabulary, words do little good without knowledge of how to put them together into sentences. This is especially true for a highly inflected language like Russian, where a good deal of meaning is contained in inflectional endings. Grammar, like vocabulary, is a building block of language learning. This section will discuss the role that grammar will play in the electronic textbook.

4.4.1 Teaching Grammar

A continuing debate in the world of language teaching concerns whether grammar should be overtly taught or not, and, if it should be, precisely what its role should be. It seems, in many ways, that this debate is coming full circle.

Since the mid-1970s, some foreign language teachers have stressed the importance of communicative competence over grammatical competence (Garrett, 1986).

In addition, adherents to the natural approach stressed that learners should get large amounts of input, often as a substitute for most overt grammar teaching. They felt that adults learning their second language, like children learning their first, would construct their own grammars naturally if given enough input. The combination of these philosophies has driven the teaching of grammar from the forefront of language teaching. It is true, after all, that students frequently fail to properly use grammatical structures in their speech, even when they use them correctly on tests and in drills. At the same time, students often fail to learn to use grammar correctly unless it is taught to them overtly; Canale and Swain (1980) give evidence that communication cannot take place without some level of grammatical accuracy. Unfortunately, there is insufficient experimental evidence on both sides of this argument, making it difficult to impossible to assert that either one is the correct approach (Garrett, 1986). Therefore, a middle-of-the-road approach seems advisable. Both grammar and communication must be addressed in the foreign language classroom in order to achieve both grammatical and communicational competence.

Today's educators are becoming more amenable to using approaches derived from a number of teaching theories, instead of subscribing to one narrow theory. They are coming to realize that, as Garrett puts it, _____

“the baby of grammatical competence is being thrown out with the bathwater of the grammar-translation method, with the result that students who have been allowed or encouraged not to worry about grammar may develop a kind of irremediably inaccurate fluency” (p. 133).

Therefore, a variety of approaches must be taken for students to achieve communicative competency: a great deal of aural input is certainly beneficial, as are participatory, communicative activities, but direct work on grammar is also important. Some students

will benefit from certain activities more than others, depending on their own cognitive strengths. For example, students with a “good ear,” or strong auditory capabilities, will benefit the most from great amounts of aural input. Others, especially those social students who enjoy class participation, will enjoy communicative activities. Students with analytical minds may greatly appreciate grammar work.

It turns out that students express a desire and a need for explanation of grammar and language points. In a study of 158 Japanese students studying English using an interactive videodisc system for communicative learning, Scott, Jolly & O’Brien (1989) found that almost 90% of the students would have liked more explanation of new language points. Even strong supporters of communicative language learning such as Underwood (1984) agree that grammatical explanations should be made available to students.

Good foreign language teaching means utilizing a repertoire of approaches. When materials are presented in a variety of ways, most students will assimilate the knowledge from one or another or those sources. If teachers and materials are restricted to using just one method, however, the majority of learners will find themselves somewhat left out of the learning process.

4.4.1.1 Inductive and Deductive Approaches

Grammar has been taught in a great number of ways: in the native language, in the target language, inductively, deductively, with explanations, without explanations, in paradigms and in dialogues (Garrett, 1986). New methodologies gain popularity for short periods of time, but usually fail to make sweeping changes in language education. It is likely that changing our methodology yet again will not make an appreciable difference in student achievement. It has become clear that we do not know how students use the rules that they learn, if they indeed use or learn them at all. Given that

there is a place in the curriculum for grammar, the ways of teaching it must be explored. Should the rules of grammar be set out for students to read, or should the students be encouraged to deduce the rules through the analysis of well-chosen examples?

Communicative language teaching stresses that students should not be required to “trudge through” grammar explanations, and that grammar should principally be presented in an implicit, not explicit manner (Underwood, 1984). However, as noted above, Underwood has no objection to allowing students to access explicit grammatical clarifications when they need to do so. One solution to the grammar approach problem is to let learners experiment with both implicit and explicit grammar presentations in the early stages of their learning, and then to let them choose which approach best suits their needs and strengths as their study of Russian progresses. Laurillard (1991) points out that the inductive approach may simply create too large of a cognitive load for some students, making it inappropriate for them. In addition, some students are more comfortable with having the rules available to them immediately (Scott, Jolly and O'Brien, 1989). That is, some students will enjoy and profit from the challenge of the inductive approach, while others will be content in the security of the deductive, explicit approach.

It could be argued that the students who induce the rules from examples are learning more than those who simply accept the rules as presented. After all, as Garrett points out, students will need their powers of deduction as their study of the target language continues. Students often glean rules from examples whether instructors ask them to or not. However, if weaker students are constantly obliged to undertake the cognitively difficult work of discovering the grammatical rules of the target language, cognitive overload may take place. Sometimes, it works just as well to present a concept directly, instead of forcing students to spend the time to try and figure it out

from examples. Also, sometimes students induce the wrong rule from a group of examples; their rules may indeed account for the examples which they have seen, yet are not correct rules of the language. This reaffirms the notion that students should be given the choice of how to approach the grammar wherever possible, and allowed to access explicit rules to ensure that their understanding is correct.

Cognitive style plays a role in a student's ability to learn grammar. For example, Abraham (1985) found that field-independent learners (as measured by the Group Embedded Figures Test, developed by Oltman, Raskin and Witkin, 1971) performed better on deductive-style grammar lessons, while field-dependent learners did well learning a grammar point from a series of examples, in an inductive style.

In general, however, there is no convincing evidence that students get more from either the inductive or deductive approach (Garrett, 1986) and therefore the two methods may be mixed in the course materials (Corder, 1988). Examples, explanations, induction and hypothesis testing exercises all have a place in language learning, but there are no compelling reasons for setting a strict order for their introduction (Corder, 1988). Indeed, the attention of students may be held for a longer period of time and provide better results if approaches are varied throughout the course.

4.4.1.2 Grammatical Terminology

Since students are learning grammar, should they learn to talk about it? That is, how much linguistic terminology should students learn while they are studying foreign languages? One might argue that if students are going to learn grammar, they should learn to talk about it, too. The question in that case could concern which terminology they should use (Corder, 1988). There is nothing really wrong with talking about grammar, especially if it can be done in the target language. After all, talking about grammar in the target language is conversation, just as talking about the weather is, and

in the context of the classroom, it is just as interesting, and potentially more useful topic of conversation (Underwood, 1984).

Some textbooks present the Russian words for various grammatical concepts but stop short of actually asking students to use them (Clark, *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ*). Others present the terminology in English only (Cioran), while still other texts (Lipson) go even further and have students memorize the terminology in the form of dialogues:

- Какого рода слово *без*? Мужского рода?

-- Да что вы говорите!

Как известно каждому школьнику, слово *без* - предлог.

У него нет рода....

- Of what gender is the word *без*? Of the masculine gender?

-- But what are you saying!

As is well-known to every schoolchild, the word *без* is a preposition. It doesn't have gender.... (Lipson, 1982, p. 84)

However, the trick in introducing grammatical jargon is making sure students understand the words which they are using to describe the language; just because they can name a particular structure does not necessarily mean they they can recognize and use that structure. To ensure that students understand the concepts which are presented to them, we must provide them with copious examples, with glosses if necessary, to illustrate them (Garrett, 1986), followed by exercises to further ensure this understanding. Once students understand the concept attached to the name used to refer to it, grammatical jargon becomes a convenient way of referring to those concepts.

4.4.1.3 Using Existing Knowledge

As discussed in section 1.2, one major tenet of cognitivist theory is that new knowledge is acquired via old knowledge. Thus, new instruction should build on old instruction. We must remind students, in a systematic way, of what they have already learned (and presumably mastered) before we offer them new, related knowledge.

If this is true, then students will profit from being reminded of facts which they already know and which can be related to the new concepts which they are about to learn. For example, if students have already learned the masculine singular animate accusative endings (ЭТОГО УМНОГО СТУДЕНТА 'that clever student,' МОЕГО ХОРОШЕГО ПРЕПОДАВАТЕЛЯ 'my good teacher', etc.), they should be reminded of them when they are about to learn the genitive singular. Similarly, if students are already familiar with the fleeting vowels е/ё/о from the nominative singulars and plurals of such words as американиц/американцы 'American (m.) and подарок/подарки 'gift', they should be reminded of this fact before they are presented with the genitive plurals of words such as девушка/девушек 'girl', сестра/сестёр 'sister', студентка/студенток 'student (f.)'.

Such explanations must be in a language students can understand. If students cannot comprehend the grammatical explanations, they cannot use them. At the same time, explanations must guard against under- or over-estimating the students' knowledge (Bragger, 1985). The reference text *English Grammar for Students of Russian* (Cruise, 1987) is often recommended as supplementary material for beginning Russian students. Cruise's reference provides a number of Russian examples alongside their English counterparts to help students make the connections between the familiar English structures and the unknown Russian ones. First, a short description of the grammatical point is given. This is followed by a number of annotated English and

Russian examples. The following is excerpted from the section entitled: “What is a Predicate?” (p. 26-7).

A PREDICATE is a word which defines or describes the subject of a sentence to which it is connected by a linking verb. Depending on whether it is a noun or adjective which follows the linking verb it is called a PREDICATE NOUN or a PREDICATE ADJECTIVE.

In English: The most frequent linking verb is *to be*. Other commonly used linking verbs include *to seem*, *to appear*, *to become*, *to taste* and *to feel*. By identifying the part of speech of the word that follows the linking verb, you can identify the type of predicate it is.

links *Natasha* to *girl*

|

Natasha *is* a foolish **girl**.

|

predicate noun

Cruise presents two additional English language examples, one using a predicate adjective and the other using both a predicate adjective and a predicate noun and non-*to be* linking verbs. An additional note about linking verbs also follows before the Russian examples are presented.

In Russian: Predicates operate in much the same way as they do in English. Linking verbs take predicates either in the nominative or in the instrumental case (see **What is Meant by Case?**, p. 10). The choice of case is determined by the verb...

Predicates agree with the noun they modify, i.e., the subject, in gender and number. The case of the predicate is dictated by the verb and its tense.

	linking verb	predicate adjective
She	<i>seemed</i>	sad.
Она́	казáлась	гру́стной
subject fem. sg.	linking verb	predicate adjective
		fem. sing.
		instrumental case

In Cruise's book, four more Russian examples follow this one. The technical jargon is defined for the student so that it can be used later in the explanation. Everything the student needs to understand the explanation is in one place and any technical terms are clarified before they are used. At the same time, this reference avoids a condescending tone.

There are many ways to help students learn and remember new rules and information. Students can be encouraged to use many devices to help them connect old knowledge to new knowledge. Mnemonic devices (discussed in section 1.2.2) are one way to do this; other types of comparisons and analogies can help students associate, remember, and eventually make their knowledge automatic. Carrell (1988) encourages teachers to provide examples of such associations, as well as counterexamples, so that the students know which devices to use. Similarly, the textbook can provide such materials. Pearson and Johnson (1978) and Pearson and Spiro (1982) (both cited in

Carrell, 1988) discuss the use of “analogies, comparisons, even metaphors to build bridges between what the students already know about a concept and what they may need to know in order to read and understand a particular text” (Carrell, 1988, p. 246). Any device which can help students remember is useful. But the materials must also help the student to understand how to use the devices; otherwise, they are useless.

Of course, knowing a grammatical fact does not entail ability to use it in language. This point will be explored further in the following section.

4.4.2 Using Grammar

An important point made by cognitivists is that there is a difference between knowing a fact and knowing how to do something. Unfortunately, grammar has long been seen as something to know, instead of a tool which students must be able to use. Students who can quote rules do not necessarily know how to use them, either in normal speech or in the more controlled atmosphere of a written exam. Somehow, we must get students from the state of knowing rules to that of being able to use them.

Another cognitivist principle implies that instruction should teach ways of solving problems rather than merely provide facts (Sharwood Smith, 1988b). That is, we must teach students to use problem-solving algorithms and to build such algorithms independently. One algorithm sometimes taught to beginning students of Russian involves the creation of imperatives from present tense verb stems. (See section 2.2.1.1 and the pocket materials for a demonstration of this approach.) It must be kept in mind, however, that algorithms like mnemonics and metaphors represent only the first step towards integrating discrete items into memory. Students are not expected to use such devices forever for every individual piece of information they learn. For any given piece of information (a grammatical rule or lexical item, for example), they are useful only until the knowledge linked through these devices has become automatic.

Confusion concerning the difference between knowing facts and knowing how to do something is not limited to language learning. For example, a popular reference for instructional designers discusses the various types of instructional goals we might set forth for our learners (Dick & Carey, 1990). One of the examples given by Dick and Carey involves naming the keys which move the cursor around on the screen in a computer program such as a word processor. The authors classify this sort of knowledge as “Verbal information--stating facts, providing specific information, e. g. naming objects” (p. 37). But just because learners can name command keys or describe grammar rules does not mean that they will be able to use this information in a real-life situation. They must be trained in using the processes which employ the facts which they have learned. This is why exercises are such an important part of learning grammar. It is not enough for students to read about the rules and see examples, no matter how numerous they are. They must learn to recognize and apply the rules themselves. They should learn to use the rule in isolation and then along with other rules which they have already mastered. And as learners gain more control over the pure mechanics of the rule, they can be expected to use it in more communicative environments. Thus, I propose the definition of eight exercise “levels”:

1. Recognition of the concept and its forms, generally with reliance on grammatical facts only
2. Recognition of the concept and its forms, with more emphasis on semantic and pragmatic factors
3. Production of forms (mechanical, with no reference to semantic or pragmatic considerations)
4. Production of forms with understanding of grammatical clues or context required for successful completion of the exercise

5. Production of forms with grammatical cues and contexts, mixing on the new structure with older, known structures
6. Production of both new and known forms with understanding of semantic and pragmatic context required for successful completion of the exercise.
7. Translation-type exercises.
8. Communicative exercises.

It is important to note the progression of difficulty between these levels. The textbook must present progressively more difficult tasks to bring the student from the level of recognizing forms to to level of being able to use them creatively. Unfortunately, most existing textbooks leap directly from relatively simple exercises (at level 3 in the description above) to difficult ones (such as those at levels 7 and 8). It is little wonder, then, that students sometimes experience difficulty using the grammar they have learned. In the following sections, exercises appropriate to each of the levels outlined above will be demonstrated.

4.4.2.1 Recognition of a Concept and its Forms

Before we can reasonably expect students to produce forms, they should be able to identify them. In addition, students need to understand the function of these forms in order to use them properly.

For example, when teaching the prepositional case, we must make sure students learn that the ending *-e* is generally associated with that case. Similarly, students must recognize that the endings *-л, -ла, -ло, -ли* are indicators of the past tense. We might present students with exercises like the following from *Начало* (Book I, p. 73):

Упражнение 3.3 Recognizing Cases

Consider each noun and indicate whether it is the subject (S) or the direct object (DO) in the sentence or clause. Pay attention to the word order in each sentence.

1. —Что читаёт бабушка? —Бабушка читает книгу.
 2. —Лéна слúшает мýзыку? —Нет, мýзыку слúшает Вова.
 3. —Что пúшут журналисты? —Журналисты пúшат статьи.
 4. —Ты читаешь книгу или статью? —Я читаю книгу, а статью читает Лéна.
 5. —Лéна пúшет письмо? —Нет, письмо пúшет Мáша. А Лéна пúшет статью.
 6. —Кто читаёт мою книгу? —Книгу читает твоя мáма.
- (1.—What is Grandmother reading? --Grandmother is reading a book.
 2. --Is Lena listening to music? --No, Vova is listening to music.
 3. --What do journalists write? --Journalists write articles.
 4. --Are you reading a book or an article? --I'm reading a book, but Lena is reading an article.
 5. --Is Lena writing a letter? --No, Masha is writing a letter. But Lena is writing an article.
 6. --Who is reading my book? --Your mother is reading your book.)

The following exercise, from *Голоса* (Book 1, p. 310), is an introductory exercise to recognizing the imperfective and perfective aspects. It asks students to determine when events occurred relative to one another, something they can ascertain by noting the aspect of the verbs used.

Упражнение

14. For each sentence, indicate whether the events occurred at the same time or one after the other.

- a. Мы поужинали, пошли в кино и посмотрели фильм.
- б. Когда мы поужинали, мы пошли в кино.
- в. Мы ужинали и смотрели фильм.
- г. Когда мы ужинали, мы смотрели фильм.
- д. Когда мы поужинали, мы посмотрели фильм.
- е. Мы купили продукты, пошли домой и приготовили обед.
- ж. Когда мы купили продукты, мы пошли домой.
- з. Когда мы покупали продукты, мы говорили о фильме.
- (a. We ate dinner, went to the theater and watched a movie.
 b. After we ate dinner, we went to the movies.
 v. We were eating dinner and watching a film.
 g. While we were eating dinner, we watched a film.
 d. After we had eaten dinner, we watched a film.
 e. We bought groceries, went home and cooked dinner.
 zh. After we bought groceries, we went home.
 z. While we were buying groceries, we talked about the movie.)

Such identification exercises can also be presented in the form of a text or in the student's native language. The following example comes from *Голоса*, Book 1, p. 111. It helps students to understand the concept of the direct object by drawing their attention to their presence in English.

6. Indicate which of the following words are direct objects. (Note that a sentence may have no direct object.)

On Friday we heard an interesting lecture on Russian art. The speaker has studied art for several decades. She concentrated on nineteenth-century paintings.

These sorts of exercises serve to give students a preliminary understanding of the new concept. This should give students more confidence as they begin more complex work.

In this exercise from Lipson (p. 81), students must determine who needs whom or what, depending on which pronoun is in the nominative case (the one needed) and which is in the dative case (the one needing).

Translate into English.

1. Онѝ емѹ нужнѝ.

2. Он ей нѹжен.

3. Она нам нужна.

4. Мы ей нужнѝ.

5. Я емѹ не нѹжен.

6. Вы нам нужнѝ.

(1. He needs them.

2. She needs him.

3. We need her.

4. She needs us.

5. He doesn't need me.

6. We need you.)

This exercise is more difficult than the previous one, since it requires translation, and not just recognition of forms, but emphasis is still on identification of structures, not their production.

4.4.2.2 Form Recognition with Emphasis on Meaning

At the next level of identification drill, students are asked to discriminate on more than one level. In the following question, knowing endings or syntactic rules is not enough; students must know what the words mean as well.

2. Which of the following is in the accusative case?

a. от этого молодого человека

b. всеми учениками

c. твоему брату

d. вашу сестру

(a. from that young man

b. (with) all the pupils

c. (to) your brother

d. your sister)

In the above example, students might be tempted to choose (a) as the correct answer, since the endings on these adjectives and nouns are exactly the same as those used in the accusative case. But the presence of the preposition от, which takes the genitive case, should steer them away from that answer. Answer (b) is in the dative plural, a form which students have not even learned yet. Unwary students might look at the ending у of брату in (c) and choose that as the correct answer, until they remember that брат is masculine, and that the accusative case ending у belongs only to feminine nouns. Thus, through a process of elimination, students can come up with (d) as the correct answer.

Another variation of this level of understanding is illustrated by some of the exercises in Lipson. In this exercise, students must pay careful attention to the meaning of each sentence in order to choose the correct answer in each case. For this reason, the

English glosses are provided to the student from the outset. Again, however, no production is required.

Which meaning of *ся* is illustrated in each of the sentences below? Identify as:

(1) one's self; (2) one another; (3) passive; (4) intransitive.

1. We took leave of one another. –Мы простѣлись.
2. The lesson is conducted in Russian. –Урѳк ведѣтся по-русски.
3. I hid myself from the sun. –Я укрьѣлся от солнца.
4. The lecture is ending. –Лѣкция кончается.
5. He prepared himself for the exam. –Он готѳвился к экзэмену.
6. They gathered in the park. –Онѣ собираѣлись в пэрке.
7. This planet is called "Earth". –Эта планѣта назывэется "Землэ".

This exercise makes the various uses of the reflexive particle *ся* known and recognizable to the student.

4.4.2.3 Simple Production of Forms

Once students can recognize newly learned forms, they can be held responsible for producing them. Cioran's *Russian Alive!* provides many drills in which students work with one concept only. In the following exercise, students drill the dative case of singular nouns in all genders. Note that each numbered exercise contains words of one gender only.

Enter the correct form of the dative case for these singular nouns.

1. Что ты сказэл...(Вадѣм, друг, водѣтель, преподаватѣль)?
2. Она любит гулэть по...(гѳрод, райѳн, парк, проспѣкт)....
6. Руководитель ходѣл по...(улѣлище, общежитие)
7. Что ты будешь говорѣть...(Лѣдия, студѣнтка, Марѣя, подруѣга)?... (Cioran, p. 251)

- (1. What did you say to... (Vadim, friend, driver, teacher)?
2. She loves to stroll around/on the... (city, area, park, avenue)....
6. The leader walked around the... (college, dormitory).
7. What are you going to tell... (Lydia, student, Maria, friend)?...

This sort of exercise allows students to become accustomed to producing the new grammar concept without the distraction of previously learned concepts. The exercise is not communicative, since the student can complete each problem correctly without actually understanding any of it, but it still has value in that it allows students to become comfortable with the endings before they have to cope with other considerations. Schaffer (1981) refers to such drills as “structural”; students can complete them solely on the basis of the structure, without any reference to meaning. The following exercise comes from Clark (p. 58). Here students must correctly produce verbs of the first conjugation, but besides knowing which pronouns belong with which endings, there is nothing else the student needs to pay attention to in order to successfully complete the exercise.

1. to read: _____

а. Мы... по-русски.

Вы тоже... по-русски? _____

Нет, но я... по-французский.

б. Борис... по-английски?

Да, он..., но с трудом.

в. Ты... по-испански?

Нет, не...

2. to know: _____

а. Я не..., где Аня.

Ты..., где она́, Ива́н?

Нет, не..., но Бори́с...

б. Они́..., что ты здесь?

Нет, не...

в. Вы не..., где мой портфель?

Да, Вон там.

(1. to read: _____)

a. We... Russian.

Do you also... Russian?

No, I... French.

b. Does Boris... English?

Yes, he..., but with difficulty.

в. Do you... Spanish?

No, (I)... not.

2. to know: _____

a. I don't... where Anya is.

Do you... where she is, Ivan?

No, (I)... not, but Boris.... _____

b. Do they... that you are here?

No, (they)... not.

в. Do you... where my briefcase is?

Yes, (I).... It's over there.)

Such exercises are largely absent from more communicatively-based texts as *Face to Face*. However, they do have value as preparatory exercises leading into

communicative ones. In addition, they provide constructions which students can learn to use in real situations.

4.4.2.4 Producing Forms from Context

Another step up on the difficulty ladder would be an exercise in which students must determine fill in correct forms based on context. That is, unlike the exercises in the previous section, it requires semantic understanding of other words in the sentence. This example comes from Lipson (p. 80). In it, students must identify the subject and make *нужен* agree with it in gender and number; that is, they must concentrate on several factors.

Fill in the correct form of *нужен*.

1. Писателю _____ карандаш.
2. Уборщику (janitor) _____ мыло.
3. Водителю (driver) _____ машина.
4. Каждой машине _____ улица.
5. Жителю города _____ город.
6. Великому философу _____ великие мысли.
7. Каждому туристу _____ Великое Блинское море.

(Fill in the correct form of 'need').

1. The writer _____ a pencil.
2. The janitor _____ soap.
3. A driver _____ a car.
4. Every car _____ a street.
5. The inhabitant of a city _____ the city.
6. The great philosopher needs _____ great thoughts.

7. Every tourist _____ the Great Sea of Blinsk.

In the next exercise, from *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ*, the learner must fill in the correct ending on *который* depending on the gender of the noun in the main clause.

4. Антoн Николаевич, *который* живёт в квартире номер8, приходит в субботу играть в шахматы. Лариса, котор... опаздывает на работу, едет на такси. Молодые люди, котор... покупают здесь газеты и журналы, живут недалекo. Василий Николаевич, котор... едет на автобусе, наш сосед. (p. 95)

(4. Anton Nikolaevich, who lives in apartment number 8, comes to play chess on Saturdays. Larisa, who is late for work, is taking a taxi. The young people who are buying newspapers and magazines here don't live far away. Vasily Nikolaevich, who takes the bus, is our neighbor.)

4.4.2.5 Working with Known and New Concepts

Once students have a good degree of control over a new concept, they can begin working with older concepts as well as the new ones. The following example comes from Clark (p. 301). Here students must pay attention to the context of each of the lettered examples in order to use the correct case. The sentences in 1v. and 2v. require the student to use the dative case, which they have just learned, while the other sentences use more familiar grammatical forms.

Н. Заполните пропуски.

1. этот молодой человек
 - а. ...знает моего отца.
 - б. Я не знаю фамилии...

- в. Серёжа сказа́л, что он с удо́вольствием помо́жет...
 - г. Я думаю, что понима́ю...
 - д. Профессора́ часто говоря́т об...
2. эта америка́нская студе́нтка
- а. ...живе́т в общежи́тии при МГУ.
 - б. Мы не хоте́ли иди́ти без...
 - в. Покажи́те..., где нахо́дится библиоте́ка.
 - г. Вы зна́ете...?
 - д. Что вы зна́ете об...?

(N. Fill in the blanks.

- 1. that young man
 - a. ... knows my father.
 - b. I don't know the last name of...
 - в. Seryozha said that he would help... with pleasure.
 - г. I think that I understand...
 - д. The professors often talk about...
- 2. that (female) American student
 - а. ... lives in a dormitory near MGU. _____
 - б. We didn't want to go without...
 - в. Show... where the library is.
 - г. Do you know...?
 - д. What do you know about...?

This sort of drill is closer to being of the “semantic” style described by Schaffer. However, the choices which the students make are still somewhat mechanical, since they are based on factors such as case selection following certain verbs or prepositions.

In another Clark exercise, students must manipulate the familiar accusative case as well as the just-introduced concept of aspect and the rather difficult opposition of *ещё* and *уже* (p. 270).

Образец: --Онй всё ещё рещают, куда ехать в отпуск?
(Кавказ)

--Нет, онй уже рещили. Онй едут на
Кавказ.

1. Он всё ещё рещает, куда ехать на каникули? (Москва)
2. Таня всё ещё рещает, куда ехать в отпуск? (Ялта)
3. Ваши родители всё ещё рещают, куда ехать в отпуск?
(Чёрное море)

(Example: “Are they still deciding where to go on vacation?” (Caucasus)

“No, they’ve already decided. They’re going to the Caucasus.”

1. Are they still decided where to go during the school holidays? (Moscow)
2. Is Tanya still deciding where to go on vacation? (Yalta)
3. Are your parents still deciding where to go on vacation? (Black Sea)

4.4.2.6 Semantically-based Grammar Drills

At the next level, students deal with fill-ins where details further removed from strict grammatical details are necessary for the successful completion of the exercise. In such exercises, direct focus is placed on meaning instead of grammar. These are drills of the “semantic” sort described by Schaffer. In this example for German, taken from Schaffer’s paper, students must pay attention to context in order to insert the correct form from the list in each case (semantic, communicative task), and then use the appropriate verb forms (structural, grammatical task). In his study, Schaffer found that students who worked with drills of the semantic type did better on post-tests comprised

either of drills of the semantic type or the structural type than those who worked on drills of the structural type.

Student Task: Select the appropriate verb for each sentence from the list given below. Type the corresponding past participle in the space provided.

Verbs: *glauben, machen, rauchen, regnen*

Ich habe die Geschichte _____.

Mein Vater hat eine Zigarette _____.

Es hat die ganze Nacht _____.

Die lange Reise hat mich müde _____. (Schaffer, 1981, p. 134)

(Verbs: to believe, to make, to smoke, to rain

I _____ the story.

My father _____ a cigarette.

It _____ the whole night.

The long trip _____ me tired.)

Exercises of this type are often used in Russian to drill verbal aspectual pairs, the use of verbs of location and position, and verbs of motion. In the following exercise from Clark (p. 478), learners must determine whether to use the perfective or imperfective on the basis of the context. In addition, they must pay attention to the gender, number, and tense of the verb (although some of this information is provided by the English-language cue in italics):

Б. Совершенный или несовершенный вид?

1. возвращать/вернуть

а. Коля всегда вовремя (*returns*) книги в библиотеку.

б. --Вы уже (*have returned*) тарелки в столовую? --Ещё нет, но я их сейчас (*will return*).

в. --Когда ты (*will return*) мне мою книгу? --Ну что ты? Я тебе её (*returned*) на прошлой неделе!

(B. Perfective or imperfective aspect?)

1. to return (imperfective/perfective)
 - a. Kolya always (*returns*) books to the library on time.
 - b. "Have you already (*returned*) the plates to the cafeteria?" "Not yet, but I'll (*return*) them now."
 - v. "When will you (*return*) my book to me?" "What are you talking about? I (*returned*) it to you last week!"

To successfully complete such an exercise, learners must attend to the proper use of both new and known information, making this a relatively difficult task. The main focus is on the newest concept, aspect, but attention must also be paid to the already familiar concepts of agreement and tense.

4.4.2.7 Translations

What role should translations play in language learning today? While we clearly should no longer use the grammar-translation method as our sole method of teaching, translation need not be eliminated completely from the teaching repertoire, since it can still be a valuable part of the language learning process. Unlike fill-in, multiple choice and matching exercises, translation requires students to put together full sentences in the target language without a direct focus on grammatical structures and vocabulary. Good translation exercises can push students to use all their knowledge without encouraging them to foray into material to which they have not yet been introduced, as free response exercises (discussed in section 4.4.2.8 below) can cause them to do. In addition, translations are more easily evaluated by the computer than free-responses, because the

environment is more structured. More information on translation can be found in section 4.9.3.

Due to the negative connotations which translation brings to the minds of today's textbook authors (especially of those whose approach is communicatively oriented), translation exercises are often camouflaged by instructions which read: "Imagine that you are asking someone..." (*Russian Alive!*), "Imagine you are telling someone..." or "Express the following in Russian." (*Russian: Face to Face*). Yet it is clear that translation is the focus of the exercises like the one from *Russian: Face to Face* below:

Express the following in Russian:

1. "John, what did you do this morning?"

"I played chess with a friend."

2. "Igor, what did you do in class?"

"We solved math problems."

"How long did you work on the problems?"

"I worked on them for three hours."

"Did you solve all the problems?"

"I solved eleven. I didn't solve three. I didn't have time."

3. "Jane, what did you do yesterday evening?" _____

"I was reading a book."

"How long did you read?"

"For an hour."

"Did you finish your reading?"

"Yes, I did." (Morris, Vyatyutnev, & Vokhmina, 1993, p. 155

(workbook).)

What is remarkable about these translations, however, is the naturalness of the exchanges. *Голоса* uses a remarkably similar approach. In the following exercise, instead of “fill in the blanks,” students are instructed “What would you substitute for the words in parentheses?”

--(Whom) ты зна́ешь в на́шем универси́тете? (p. 204)

Instead of “translate,” instructions for the following exercise read “How would you express the following in Russian?”

“Where is my magazine?”

“Masha is reading it.” (p. 204)

Contrast these with the following translation examples from Clark. Here, the English used is often stilted to nudge the student towards the use of certain forms.

4. Olga went to the store, there bought a skirt, blouse, and shoes and after that went to a movie....
6. Have you already paid for these things?
Not yet. I'll pay right now and after that let's go have lunch.
7. I'm afraid that you're bothering Sergei.
No, not at all! I'm not bothering him!
8. Let's go see Tanya! _____
Let's.
9. We will go to GUM, buy a present and then go to see Ivan Aleksandrovich....
14. I hope that Ivan will like this scarf.
Of course, he will. He needs a scarf. (Clark, 1983, p. 302)

Clearly, the newer textbooks provide a different approach to translation, resulting in more natural exercises. Similar care will be taken with the electronic textbook, so that translations are as natural as possible.

4.4.2.8 Free-response Questions

Once students have mastered individual structures and can construct them on their own, they are ready to answer fully communicative and meaningful questions. Clark provides a section of such questions at the end of each lesson. Such questions can be prepared outside of class, as written homework, or they can be used in class for oral practice.

Вопросы

1. Какой урок вы проходите?
 2. Какой сегодня день недели? А какой день был вчера?
 3. Как вам нравится погода сегодня?
 4. Когда вы обычно занимаетесь: утром, днём, вечером или ночью?
 5. Вы когда-нибудь смотрели балет? Где вы смотрели его?
 6. Куда вы собираетесь поехать на каникулы?
Как вы будете там проводить время?
 7. Куда вы обычно ездите на каникулы?
Как вы там проводите время?
 8. Вы любите летать? Вы часто летаете?...
- (1. Which lesson are you working on?
 2. What day of the week is it today? And what day was it yesterday?
 3. How do you like today's weather?

4. When do you usually study: in the morning, daytime, evening or night?
5. Have you ever seen a ballet? Where did you see it?
6. Where do you plan to go during break? How will you spend time there?
7. Where do you usually go on break? How do you usually spend time there?
8. Do you like to fly? Do you fly often?...

Russian Alive! also provides a basis for conversation in its “Activity sheets” found in most lessons. The approach here, however, is slightly different. The students must complete sentences as a fill-in exercise to provide personal information in the “Individual Activity”. Then, students ask similar questions of their classmates in the “Pair Activity.” A short excerpt is given below.

1. Откуда вы? (страна)
 2. Вы из какого города?
 3. Из какого города ваш друг (ваша подружка)?
 4. У кого вы были вчера?
 5. От кого вы часто получаете письма?
 6. Около чего находится ваш дом?
 7. Для кого вы хотите купить подарок?
 8. Сколько стоит талон на автобус в вашем городе? _____
 9. Сколько студентов на русских занятиях?
 10. Какой у вас рост? Вес? (Cioran, p. 184)
- (1. Where are you from? (country))
 2. What city are you from?
 3. From what city is your friend (your girlfriend)?
 4. Whose place were you at last night?
 5. From whom do you often receive letters?

6. What is close to your house?
7. For whom do you want to buy a gift?
8. How much is a bus ticket in your city?
9. How many students are in the Russian class?
10. How tall are you? How much do you weigh?)

Note the marked difference between the naturalness of the questions from the two textbooks. The questions in the second group are from a new communicatively-based textbook, and the difference between this newer textbook and the older one is evident.

4.4.2.9 Grammar in Existing Texts

The problem is that today's textbooks do not lead students from one level of competence to the next very well. Most textbooks omit the recognition level (4.4.2.1 and 4.4.2.2) almost entirely, while textbooks like Lipson provide too little on the upper, communicative level (4.4.2.8). The area where textbooks pay perhaps the least attention is in Levels 4 and 6 (4.4.2.4 and 4.4.2.6), where students must produce forms in environments where meaning, not just grammar, plays a role in determining which form they choose. The electronic textbook will allow students to work at each of the eight exercise levels. Once students have shown mastery at one level, they will be allowed to advance to work on the next level. Ensuring that students understand the details of each grammar point as they work gives them a better chance of actually understanding the structures and use them in their communicative activities more effectively.

4.5 Culture

One of the major differences between the Russian textbooks published prior to 1990 and those which have appeared since then is their approach to the teaching of culture. Part of this is due to the recognition of the fact that culture goes beyond the great artistic and historical accomplishments of a society. While this type of culture

(commonly known as “big-C Culture”) is clearly an important part of learning about a society, more important for beginning speakers of a language is the understanding of the ways the people in a target society interact with each other. This type of culture is known as “little-c culture,” and it is in this area that today’s textbooks have made great strides over their predecessors. Important aspects of culture include the giving students an appreciation of the various social strata and the roles and duties of men and women in Russian society.

4.5.1 culture and Culture

The difference between “big-C” Culture and “little-c” culture alluded to above is one that deserves additional discussion. As Wright (1985) points out, Culture is “elite culture: the ‘great’ individuals and ‘high points’ of the nation’s historical or artistic tradition,” while culture is “the customs, assumptions, values and amusements of everyday life” (p. 89).

Presenting “big-C” Culture is generally easier than teaching “little-c” culture. After all, Culture is largely embodied in artifacts which can be easily seen, heard, or read. That is, Culture is contained in the architecture, dance, literature, music, painting, sculpture and other art forms of the society. The computer is highly useful medium for teaching “big-C” Culture, because digitized audio, video and still pictures can be put on the computer--on a World Wide Web page, for example--in an integrated fashion.⁴

Today, many people study foreign language to prepare for travel abroad. Therefore they need to have some understanding of both their own (“little-c”) culture and as well as that of the target culture (Benevento, 1984). For non-native speakers of a language to become competent participants in the target culture, they must understand

⁴This idea comes from Professor James West of the University of Washington, who has created a World Wide Web page for his Russian Culture course taught in Spring 1996.

the ways native speakers interact with one another and the reasons behind those interactions.

But “little-c” culture is not as easily and casually observed as “big-C” Culture. In general, it is possible to capture “big-C” Culture in photographs and recordings. “Little-c” culture, however, must often be explicitly pointed out to the learner, and exercises may be necessary for students to properly retain and use it. Examples of “little-c” culture include the ways people of different ages and social classes address and greet one another, the customs observed when visiting someone’s house, or the responsibilities held by the members of a family. In most cases, simply presenting these facts in the context of a dialogue or a story is insufficient to make them obvious to learners; their significance must be more specifically indicated. *Начало* and *Голоса* are particularly adept at pointing out such facts. They present cultural concepts in the context of a dialogue or story, as suggested by Crawford-Lange & Lange (1984). Once the ideas have been presented, their significance is discussed. As an illustration, see the dialogue excerpt and commentary from *Начало* (Book I, p. 107-8):

“ЛЕНА: Вы хорошо говорите по-русски.

ДЖИМ: Нет, ещё не очень, но спасибо. Я говорю по-русски здесь, а дома у меня нет никакой практики. А вы живёте здесь?...

[Lena: You speak Russian well.

Jim: No, not yet, but thank you. I speak Russian here, but I can’t practice at all at home. What about you, do you live here?]

The virtue of modesty

Self-promotion is less acceptable in Russian culture than it is in American. Not only do you not “toot your own horn” in Russian culture, but indeed, even

responses to praise--including well-deserved compliments--are rather subdued. When Russians are complimented, they invariably thank the person offering the compliment (Спасибо or Спасибо за комплимент), and often say something to show that the praise is not taken for granted. As an example, we saw Jim's reaction to Lena's compliment...his response shows not only his Russian language skills, but also his understanding of this less obvious but very important aspect of Russian culture."

The English commentary explains why Jim responded the way he did. Students should be encouraged to work such cultural details into the dialogues and stories they write themselves and present to the class. This helps them to exercise and practice the cultural details which are so vital to their learning of the language.

It is important to remember that the textbook is one of the primary providers of cultural information to the beginning language student. As Wright points out, the textbook can send very subtle messages to students about the target culture. "Personality traits, value judgments, or the behavior of characters in the text, if left unremarked, may well be interpreted by the student as typical or at least acceptable" (Wright, p. 89). Therefore, it is important to provide information which may be useful in clarifying these mysterious cultural points. Again, this is an area in which the newer Russian textbooks excel; older textbooks largely ignored such issues, leaving teachers to address them on their own. Whether teachers were capable of this is another question entirely, given the complications of studying in Russia during the Soviet era.

The important issue is that culture must be incorporated into the general study of the language. When the study of culture is set aside as a separate unit, it is often seen as optional and omitted by teachers in the interest of time. Cultural points should be

integrated into the stories presented in the text and made part of classroom discussion and activity.

4.5.2 Difficulties in Learning culture

Mantle-Bromley (1992) suggests that students must be prepared to learn culture, especially if they have strong nationalistic feelings towards their own culture and ingrained stereotypes about the target culture. That is, they should be encouraged to think about their own culture as preparation or part of learning about the target culture.

There are several advantages to asking students to think about their own culture when learning about the target culture. Individuals often take “facts” about their own culture for granted. But when they discuss these “facts” with other members of that same culture, they often disagree about them. This conflict allows a strong case to be made against the dangers of generalization and stereotyping to be made. In addition, when the textbook presents cultural details, explanations may need to be given to ensure that they are not overgeneralized or marginalized. For example, the stereotypical belief on the part of Americans that “All Russians drink vodka” can be countered with the statement “All Americans drink beer.” The historical and societal reasons behind these assertions can be explored, as well as the role played by alcohol in Russian and American society. Students must also learn that target culture norms are not strange, wrong or illogical, just different from the ones to which they are accustomed. This is often a difficult transition for learners and much discussion may be necessary

Finally, as Crawford-Lange and Lange point out, instructors should also stress that culture is a process, a set of ever-changing traits of a group of human beings, not static, impersonal phenomena to be memorized. Cultural norms may change over time. (One example in Russian culture might be the replacement of black marketeers and money changers by “businesspeople” and the attitude of the government towards these

people.) Culture is ever-changing, and students should keep this in mind. The electronic textbook, however, holds an the advantage over paper-based works. Since changes can be made more quickly and transparently (without waiting for a new edition to be printed), it is better able to keep up with changes as they occur.

4.5.3 Subcultures within the Target Culture

As Wright points out, many textbooks present only a few aspects of the target culture. This is often the world of the university and the life of the people (usually men) who make up this culture. However, it is equally important to present, in non-marginalizing terms, other aspects of society. This may include home life, the life of the “common man” and the duties of women. *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ* was actually successful in this regard, probably due to the Soviet Communist ideal of portraying all professions and genders as equal. However, American textbooks of the same period were not as successful, often providing an idealized view of the Russian world as seen from the ivory tower of the university. Again, the most recent textbooks (notably *Начало*) present a view which, while still biased towards the university, gives students insight into the lives of children, senior citizens, and other people not part of the university lifestyle, and shows the interactions between these individuals. The characters are presented in a relatively unbiased manner. That is, those with less education are presented not as quaint, comic characters, but as real people with contributions to make and problems to solve: the elevator doesn't work, their neighbors are too loud, or they've forgotten to take a bag with them when they go out shopping. They do not live in an idealized world. For Wright, the presentation of such everyday difficulties, negotiations, and solutions comprise an important part of presenting the culture. In addition, such situations provide a good springboard for communicative activities of problem-solving and negotiation.

Wright reminds us that language is used for more than exchanging information and solving problems. It is also used to “relate” to other people, to make emotional connections with them. Again, the newest textbooks pay much more attention to modeling these types of language use than were those predecessors. Take, for example, this excerpt from *Начало* (p. 206).

ТАНЯ: ...Света и я будем праздновать новоселье и приглашаем тебя.

ДЖИМ: Спасибо. А когда будет новоселье?

ТАНЯ: В субботу, в семь часов вечера. Пожалуйста, не опаздывай.

ДЖИМ: Я никогда не опаздываю. Что принести?

ТАНЯ: Спасибо, ничего не нужно. Сыр, колбаса,и вино мы уже купили. А готовить ты, наверно, не умеешь.

ДЖИМ: Я? Не умею готовить? Таня, ты меня обижаешь. Мои друзья говорят, что я готовлю совсем неплохо....

(Tanya: Sveta and I are having a housewarming and inviting you.

Jim: Thank you. And when will the housewarming be? _____

Tanya: On Saturday, at seven in the evening. Please don't be late.

Jim: I'm never late. What should I bring.

Tanya: Thanks, but you don't need to bring anything. We've already bought cheese, sausage and wine. You don't cook, I bet.

Jim: Me? Not cook? Tanya, you offend me. My friends say I cook pretty well.)

The tone of this conversation is normal for Russians, but it might take Americans by surprise. For example, the exhortation not to be late sounds rude to American ears. Similarly, while the statement *ТЫ МЕНЯ ОБИЖАЕШЬ* might strike Americans as a very direct (and rude) expression of displeasure, it does not sound that way to the Russian. And the fact that the word *НЕПЛОХО* translates better as “pretty well” instead of “not too badly” is another indication of the self-effacing manner adopted by Russians when discussing their own talents. If such differences are not made clear to students, they may take offense where none was intended, or offend someone else inadvertently.

Gender relations are a particularly difficult issue. Wright’s major complaint with most existing foreign language textbooks, especially older ones, is their stereotypical portrayal of men and women. She notes that men are often depicted as “active, independent and strong” and “valued for their intelligence or skill,” while women are “valued for their looks” and are “passive, dependent and emotional”. Men are portrayed as the problem-solvers, the ones who have serious conversations and make plans and suggestions. But women in these texts tend to ask for help, be dependent, express their emotions more freely, and participate in social activities and “trivial” conversations (p. 91-92). Yet in reality, men sometimes assume “women’s” roles and vice-versa. It is helpful to demonstrate this. In *Начало*, for example, Jim is known as a competent young man who is good with his hands, and is respected by the neighbors for fixing the elevator. However, he does not know much about shopping in Russia and must be taught by more experienced shoppers (mostly women) how to go about it. This balancing of Jim’s skills by his deficiencies approaches the balanced presentation advocated by Wright and makes him a more sympathetic, believable character.

Wright does not argue that the solution to sex stereotyping in textbooks lies entirely in switching traditional male roles and female ones. Rather, she argues for a re-evaluation of the worth of those roles. For example, the woman's role in Russian life generally includes cooking, cleaning and child rearing as well as working outside the home. Since most Russian men do not participate in "homemaking" activities, it is not really reasonable to portray them doing so. But these skills, when performed by women, need not be devalued or marginalized either; their value can be brought to the attention of the student. The trials of trying to put a meal on the table every night can be illustrated from the point of view of a woman. Perhaps she goes to a lot of trouble to find the food she wants to buy, but her family does not realize it. Preparing a good meal for her family is an important task, not to be taken lightly, and it should not be marginalized.

Similarly, generalizations of men may not be particularly positive. They may be portrayed as being lazy or unappreciative at home, interested only in watching soccer on television or reading the newspaper. This generalization, while accurate in some cases, should be balanced by the portrayal of men who behave differently. Other more, "positive" aspects of their home life, such as a loving relationship with children and camaraderie with neighbors, should be emphasized.

Perhaps the greatest challenge to the accurate and empathetic portrayal of cultural norms is the fact that if the texts in the language textbook are not at least periodically humorous, students will lose interest in them. Unfortunately, this humor usually consists of making fun of some aspect of a character's personality, and by association, the cultural values they represent. One way to solve this problem, and to avoid caricaturing of the characters in the textbook, is by spreading the "burden" of humor amongst the characters. That is, one character need not always be the "straight man,"

and what might be humorous about the character's personality in one context might be perfectly reasonable in another situation. Thus, humor is possible, as long as the humorous moments are balanced by a serious ones.

In summary, then, we must be aware that with every sentence we place in a textbook, we are making some kind of statement about the culture of the target language. Therefore, care must be taken to paint an accurate picture of that culture while avoiding stereotyping. Some aspects of the culture will have to be explained; some will make good points of departure for discussions about cultural differences. The principle thing is to integrate cultural discussion into the textbook, and not make them a marginal part of the language learning experience.

4.6 Listening

Perhaps one of the greatest advantages of using the computer in language teaching is its potential benefits for developing listening comprehension. In the past, a great deal of listening comprehension work has been relegated to the language laboratory and seen by students as a peripheral part of the language learning experience. But the electronic textbook integrates audio into the textbook in a way that traditional textbooks have had difficulty doing.

~~This isolation of audio materials from other class materials is evident in the fact~~
that many newer language materials provide laboratory manuals as a separate entities from the main textbook. In many older textbooks (at least those which were not based on the audio-lingual method), students could easily avoid using the audio materials at all, since no written homework was based on them. While the new textbooks (like *Начало* and *Голоса*) contain written work based on listening assignments (sometimes on videotape, but often on audiotape), there is still an element of peripherality to this work. It requires that students either go to the language lab or set up

extra equipment (such as a personal listening device like a Sony Walkman®) in order to perform the work.

But if audio materials are on the computer along with the rest of the textbook, nothing extra must be done, and their proper use is not hindered. They become an integrated, rather than peripheral, part of the coursework. The computer thus has the potential to make listening comprehension exercises a larger part of the foreign language curriculum, just by making them easier to use. Audio presentations accompanied by video are also made more accessible by the computer, again because they do not require any extra equipment setup. The computer holds other advantages for the language learner, as will be seen below.

4.6.1 Pronunciation

One of the most difficult parts of learning Russian is “tuning” the ear to the unfamiliar sounds of the language. In particular, it is difficult for students to grasp the difference between hard and soft consonants as in the minimal pairs МАТ ‘checkmate’ and МАТЬ ‘mother’, СТОЛ ‘table’ and СТОЛЬ ‘so’, or Мила ‘Mila (name)’ and МЫЛО ‘soap’. The proper pronunciation of words which undergo consonant devoicing or consonant assimilation, or vowel reduction is also complicated by the fact that the orthography of these words is not the same as the pronunciation; students must be trained to hear that the final consonant in сад ‘garden’ is not [d] but [t] and that the word хорошó ‘good’, while containing three orthographic o’s, actually contains three different vowel sounds. A dynamic video presentation plus digitized audio can help make these distinctions clearer to students.

One technique which is valuable for tuning the ear to the sounds of the language while helping students to map what they hear to the orthography of the language is the dictation exercise. Dictation is a valuable tool because it actually exercises multiple skills

simultaneously: it helps students hone their listening skills and translate what they hear into writing. The computer can easily be used to administer and correct this type of exercise, since there is only one correct answer. While it is a time-consuming task to perform in class, the computer is capable of doing it outside of class, presenting a text as many times as the student desires and correcting the work afterward. Just as in other computer-based exercises, appropriate feedback for mistakes may be provided.

4.6.2 Listening for Gist

Comprehending what one hears does not necessarily mean understanding every single word. Unfortunately, many beginning language learners fail to appreciate this fact. They must be trained to listen for gist; that is, they must learn skills which will allow them to understand the general import of a spoken passage without knowing the meaning of every word said.

One way of encouraging listening for gist is to present students with listening exercises where native speakers are talking at their normal pace. Students will find themselves unable to follow the text word-for-word, and will be compelled to listen for the general meaning. *Голоса* contains many such listening comprehension exercises. The exercises are often preceded by a general orientation to the topic at hand, so that students know what to listen for. In one such exercise (Book I, p; 296-7) students read the following in their textbook:

You are about to hear two short biographies. The first is about Dr. Martin Luther King, and the other is about Andrei Dmitrievich Sakharov.

You probably know that both became famous for their defense of human rights. How much more do you know? Most Russians have heard about King, but are unfamiliar with the details of his life. Similarly, many Americans have a vague notion of who Sakharov was, but know little more.

You are not expected to understand either of the passages word for word. However, keeping in mind the background knowledge you already possess and listening for key phrases will allow you to get the main ideas.

For both passages you will need these new words...

This introduction tells students what to expect from the exercise, and lets them know what is expected of them, putting them at ease. Students are then guided through the listening exercise. They are told to listen and make predictions about what they will hear. Students are actually asked to listen to the passage three separate times, listening for separate things every time.

1. List five things you know about King. Then check to see whether any of them are mentioned in the biography.
2. Listen to the passage again. Pay special attention to the cognates below. Can you identify them? (Note the words in this list are given in the nominative singular. They may appear in other forms in the passage. Do not let the unfamiliar endings throw you off!)...
3. Listen to the passage once again, paying special attention to the following phrases. Then use context to figure out the meanings of the underlined words.

филосо́фия ненаси́льственности Ганди _____

Но́белевская пре́мия Ми́ра

война́ по Вьетна́ме

«У меня́ есть мечта́»

The activities for the passage about Sakharov are similar: students are asked to become familiar with new vocabulary and guess the meanings of words from context. In addition, they are to obtain information about Sakharov from the encyclopedia if they don't know anything about him, and make predictions about the content of the text.

Such exercises help students develop a tolerance for ambiguity. They learn that they can complete the exercise without knowing every single word they hear, and this should build their confidence for discussions with native speakers in real-life situations later.

4.6.3 Listening for Details

One way of training students to listen for details is the use of a cloze-type procedure. Students listen to a text one or more times, and then are given a text in which some words are missing. Instead of trying to figure out which words belong in the empty spaces, students listen to a text in which these words are spoken, and fill those words into the empty spaces. Such an approach was used by Scott, Jolly and O'Brien (1989).

Голоса also contains a number of exercises in which listening for details is important. When listening to the text about Sakharov (Book I, p. 297, discussed above) students are asked to keep the following questions in mind:

- a. When was Sakharov born?
- b. What sort of work did he do when he was young?
- c. What sorts of questions did Sakharov become concerned with later?
- d. What award did Sakharov receive in 1975?
- e. Sakharov was exiled from his home in Moscow to the city of Gorky (now called Nizhniy Novgorod) for seven years. Name one of the things he managed to do while in exile.
- f. In what year was Sakharov elected as a delegate to the Congress of People's Deputies?
- g. When did Sakharov die?

The computer, with its use of digitized audio and video, brings one clear advantage to students listening for details. Random access memory allows students to go immediately to any part of the text at a touch of a key or a click of the mouse button; no fast forwarding or rewinding of magnetic tape is necessary. One existing computer program which makes full use of this faculty is MIT's *A la rencontre de Phillippe*. In this laserdisc-based program, students watch and participate in the trials and tribulations which Phillippe, a young French journalist living in Paris, encounters on a particularly busy day. His girlfriend is breaking up with him, he is trying to find a new apartment, and he is hoping for a big break at work. The student's task is to help Phillippe achieve his goals. The subtasks include navigating through Paris on the subway, reading the apartment listings in the newspaper, listening to Phillippe's answering machine and relaying messages to him, and helping him make good decisions about the opportunities presented to him. The audio, which is spoken at native speeds, is supplemented by transcripts and glosses of unknown words. In addition, the student can listen to portions of the audio over and over again. This is easily done since no rewinding is necessary; the appropriate portions of the laserdisc are accessed as they are needed.

Another advantage which has already been discussed is the computer's ability to respond immediately to a student's incorrect answers. Wyatt suggests that when the student responds incorrectly, the computer might give a hint concerning what to listen for. If a student has listened to a passage several times and still failed to extract the necessary information, a transcript of that portion of the audio can be presented, highlighting each of the words as they are spoken. These transcriptions might include expansions of contractions or reductions of speech which might be causing difficulty. For some learners, just this presentation of the passage in written form will make it clear. However, if it does not, students can click on unknown words and get an

explanation. Such explanations might include pictures, short comments in Russian, or an English language gloss or a grammatical clarification.

4.6.4 Other Listening Activities

It must also be kept in mind that the computer is capable of delivering more than just digitized audio. It can also provide high quality video accompanied by audio. Once again, the nature of this medium makes it possible for students to quickly go to the part of the presentation which they want to use. *Начало* uses video (albeit on tape, and not digitized) as part of its instruction, and contains instructions and exercises which help prepare the student for the viewing activity. Many of these preliminary activities are similar to the ones *Голоса* uses. First, there is a review of the previous events which the video has presented. This is an active exercise, not a passive reading activity. In the video review for Lesson 3, students are asked to fill in blanks to tell about the previous episode. Next, students are asked to make predictions about the events in the next episode. Unfamiliar vocabulary is also previewed, but in such a way that students are asked to make predictions, even about words which are not cognates:

In answer to the question «Где?» you may hear the following:

напра́во (*on the right*)

нале́во (*on the _____*) _____

ря́дом (*nearby*)

далеко́ (_____)

When students view the video for the first time, they are asked to perform a simple activity; in Lesson 3, they are asked to indicate the order in which the characters encounter various places in town (such as the post office, pharmacy and bus stop). On the second viewing, they are asked to watch and listen for more specific information about the town. Later, students are asked to perform communicative activities together

using vocabulary and constructions they learned from the video. A similar sequence of exercises will be used in the electronic textbook to introduce students to new video presentations.

4.7 Speaking

Speaking a foreign language is a highly valued skill, perhaps because achieving proficiency seems such a daunting task. Is this due to the fact that speaking is a more difficult skill to develop than other language skills? Or is it because students practice speaking less than they practice other skills?

Speaking, after all, usually involves two people to be meaningful. Reading and writing can be easily practiced by one person, as long as the proper materials are available. Listening practice is available through audiotapes, videotapes, or television, not to mention on the computer. But as yet, the computer lacks the ability to reliably understand human speech, especially that of a non-proficient speaker of the language. Audio-lingual methodology, based on behaviorist theory, calls for students to repeat tape-recorded words and sentences or to answer questions posed by the voice on the tape. Although students are asked to compare the correctness of their answers and the fidelity of their pronunciation and intonation to that on the tapes, they are often not readily able to do so. Moreover, ~~they sense the artificiality of this type of exercise.~~ And since there is no record of the students' spoken homework practice (unless teachers have them turn in cassette tapes of their work), some students omit individual speaking practice altogether.

Therefore, the bulk of speaking practice is currently done in the classroom, with the cooperation of the instructor and of the other students. Certainly some preparation for speaking exercises can be done outside of class. Some ideas for this type of preparation will be discussed below.

4.7.1 Pronunciation and Intonation

Teaching Russian pronunciation is a task undertaken by most textbooks in the first few lessons. For example, pronunciation instructions are usually found alongside the letters students are learning to write. This is usually quickly followed by an explanation of what stress marks mean and presentation of the rules of vowel reduction, consonant devoicing, and consonant assimilation. The basics of intonational contours are presented with full sentences. Often these rules are not mentioned again either by the textbook or by the instructor. It is no wonder that some students never really understand the system or learn to pronounce words correctly. *Начало* once again represents a notable exception to this rule. It spreads pronunciation rules over four lessons, or approximately eight weeks of course time. Attention to pronunciation should go beyond this, however; students should be encouraged to occasionally review pronunciation rules through additional examples and exercises, until they produce correct forms automatically.

One way of practicing pronunciation and intonation is through reading aloud or repeating what another person says. Both of these activities are commonly practiced in the language classroom. They can--and should--be practiced by students outside of class as well, but, as mentioned above, ~~students often fail to do this.~~ Encouraging them to practice in pairs or small groups outside of class could help remedy this problem, as could periodically requiring students to turn in audiotapes of their work.

However, the computer makes available another solution. The electronic textbook will allow students to record short samples of their oral work and send it as a sound file to the instructor for evaluation. They could read a passage several times, then be assigned a short (three to five sentence) excerpt of this passage to record for evaluation. Students will not know in advance which fragment will be chosen; the

computer could even randomly select a different passage for each student. Students therefore will be encouraged to read the entire passage several times.

This approach makes students accountable for oral homework. And since the recording can be done at the same place where they do their other homework (that is, at the computer), the assignment does not place an additional burden on them. That is, it does not require them to set up recording equipment or go to the language laboratory to do the recording.

4.7.2 Prepared Dialogues

The exercises discussed in section 4.7.1 above target pronunciation and intonation. At some point, however, they must begin to produce full, meaningful sentences in the language. Our ultimate goal for them is to create their own spontaneous utterances. However, an intermediate step using pre-prepared speech is advisable.

One commonly used way of getting students to learn full sentences in the target language is memorization. This is one of the oldest language learning techniques. Formerly, students were most often asked to memorize poems and grammatical paradigms, but in more recent years they have learned dialogues containing terms useful in conversation. Memorization of long utterances is different from memorizing vocabulary; while discrete vocabulary items can be learned using mnemonic techniques, longer passages generally cannot be learned this way. Instead, students have to learn to keep in mind the meaning of the passages which they memorize.

Students generally dislike memorizing materials, and the communicative approach has questioned the value of memorization. However, it may still be argued that memorization is a useful tool. It seems to help students internalize useful sentences and constructions which they would not have otherwise adequately learned.

Another way of getting students to speak is to have them create their own stories or dialogues and present them in class. It is not necessary for them to memorize this work; allowing them to read from notes is acceptable. While the speech they produce in this case is not spontaneous, it is at least their own. It is an intermediate step between using “pre-prepared” and fully spontaneous language, which gives them a sort of comfort zone in the beginning stages of developing the speaking skill. Students could prepare these conversations outside of class over the computer, instead of physically assembling in groups. This added convenience in preparation makes these activities more feasible in the classroom. The electronic textbook will provide guidance in the preparation of such dialogues by suggesting topics and giving samples to guide the creative process.

Constructed or cued conversations provide students yet another opportunity to speak. Constructed conversations give students cues telling them what they should discuss in their conversation. The following example comes from *Голоса* (Book I, p. 227):

Е. УСТНЫЙ ПЕРЕВОД. You are in Russia. A friend who knows no Russian passes through on a two-week tour and asks you to help buy gifts. Serve as the interpreter in a store. _____

English speaker's part

1. Could I take a look at that scarf over there?
2. No, the red one.
3. How much does it cost?
4. That's awfully expensive. How much do those gloves cost?
5. Okay. I'll take the gloves then.

This conversation is guided by the lines which one of the interlocutors is supposed to “translate” for a friend, but allows some freedom in choice of words. Such conversational frames are very useful, because they give the students something to talk about without putting all the words in their mouths, as pre-prepared conversations do. Thus, there is a greater element of spontaneity. Such cued conversations also create a situation which a student might conceivably encounter in real life.

Underwood (1984) suggests another type of cued conversation. Here, the skeleton of the conversation is given in the form of target language cues, instead of native language ones. He gives the following example for French (p. 60):

Au restaurant

Garçon: Désirez?

Client: Spécialité?

Garçon: Biftek.

Client: Alors.

Garçon: Vin?

Client: Rouge.

(At the restaurant

Waiter: You would like?

Patron: Specialty?

Waiter: Steak.

Patron: In that case.

Waiter: Wine?

Patron: Red.)

By providing the cues in French, students are discouraged (although not banned, unfortunately) from creating the dialogue in the native language and then translating it to the target language. It provides some of the words students will want to use in their own dialogues, including transitional phrases (such as *Alors*, in the dialogue above) which students might not use otherwise, but which are very important to maintaining the flow of conversations.

Another variant of the cued dialogue is the conversation gap exercise. Here, the two students need to get information from each other which they themselves do not have, thus mimicking a real-life conversational situation. In class, this sort of exercise is often conducted by giving each student a card on which facts are written either in the native or the target language. Since the conversational partners have different facts written on their cards, they must communicate the facts they have to the person who does not have them. The computer could easily be used for such an exercise. Students could be paired up on-line and each one given facts which the other student needs. Such communication gap exercises encourage more original and near-spontaneous exchanges than exercises where both students know what will happen. There will be misunderstandings and other breakdowns in communication which they will have to resolve, much as they would have to do in real conversations.

4.7.3 Spontaneous Discussions

The problem with the recitation of memorized dialogues or the presentation of pre-prepared dialogues or cued conversations is that they lack spontaneity. They do not allow students to speak their own minds on the topic at hand, nor do they allow students to react to the unexpected information provided by their conversation partners. Therefore, exercises which approach true communicative spontaneity must be used in addition to the ones discussed above.

One type of eliciting spontaneous responses is the use of “circular” conversations, as discussed by Wright. While “linear” conversations usually entail exchanges of information and a conclusion or resolution, the circular conversation has no such structure. It may begin with a line like “Where did he go?” Such an utterance can spawn a large number of questions and statements: “Who are you talking about?” “I haven’t seen him.” “What was he wearing?” “I think he went to the grocery store.” “No, I saw him leave with Lena.” “I don’t know, I just got here.” “Were you supposed to meet him here?” The spontaneity in the circular conversation is generated by the fact that students must react in a logical manner to the statements which are made by others.

Class discussions can also be initiated about the characters in texts and dialogues. For example, in *РУССКИЙ ЯЗЫК ДЛЯ ВСЕХ*, there is a story of Tanya, who works at a newsstand. All the young men come to buy their papers from her, but one day she disappears, apparently to go study at the institute. The effects of her departure on the newsstand’s customers can be explored in conversation, and students become very creative when they imagine what Tanya is doing now.

Bragger (1985) suggests that illustrations and photographs can lend themselves to conversation as well, and not just show the architecture and the artists of the target culture. *Face to Face*, for example, provides pictures which are particularly well suited to such exercises. Pictures can be discussed as a group, and questions such as “What do you think people are saying to each other in this photo?” can be posed. Similarly, students may be asked to act out the conversation they think is taking place between various the characters in a picture. Cultural discussions can also be initiated; for example, students looking at a floor plan of a Russian apartment can compare its contents and structure to American domiciles, and discuss the similarities and differences.

Video-based presentations can also be used to stimulate discussions. Wyatt (1984) suggests “eavesdropping” activities in which students watch isolated segments of discussions and try to deduce context, scenario, and details from what little they see. This approach can be used as a springboard for group communication activities. That is, students can discuss amongst themselves, in the target language, what might be going on. Because the situations are not concretely laid out for them, students undertaking this exercise are required to discover most of the vocabulary and structures they will need on their own; they cannot just listen for the relevant parts of the conversation and repeat them. This sort of exercise can be carried out on the computer, where all students can watch the video and then discuss it amongst themselves, using techniques discussed below.

4.7.4 Discussions On-line

The electronic textbook will also provide students with the opportunity to speak with other students outside of class. Small video cameras, in conjunction with software such as that developed at Cornell University (CU See Me) allows for live conversation accompanied by video. Such cameras, like the small round Connectix camera, are commonly placed atop the computer monitor and currently allow for video images and sound to be transmitted to others in real time. ~~Students could use these cameras to communicate with each other or with native speakers of Russian.~~ The instructor may have to locate native speakers with the proper hardware and software to make these sorts of conversations possible, but this is certainly within the realm of possibilities. This technology will also facilitate the preparation of conversations to be presented in class, such as those discussed in section 4.7.2.

Thus the electronic textbook, while it can play only a limited role, has the power to help students improve their speaking skills. It is certainly possible that voice

recognition technology which can “understand” even the less-than-ideal speech of non-native speakers will become available in the future. Voice-recognition algorithms are becoming increasingly common. Many telephone and credit card companies utilize voice-controlled menus on their customer service lines since they can reliably identify numbers and isolated words. Other voice-recognition software packages show promise, but these programs must be “trained” to the speaking patterns of individuals in order to be useful. At the current time, this software requires that the speakers separate each word they speak with pauses in order for the program to identify them properly. This makes them unusable for the purpose of helping students to speak a foreign language fluently.

When voice recognition and parsing become more perfected in the future, the computer may be capable of aiding students in correcting their pronunciation, and, with the aid of parsers, to help them construct grammatically correct constructions. However, since this technology is currently unavailable, such activities are not planned as a part of the electronic textbook. For the present, we will have to be content with using the computer to help facilitate the student’s spoken contact with other human beings.

4.8 Reading

The receptive skills of listening and reading require, as Grellet (1981) points out, “extracting the required information from it as efficiently as possible.” (p. 3) When students are learning to read in a foreign language, they face factors which impede this understanding. The texts they may contain unknown vocabulary and unfamiliar grammatical structures, or they might be so uninteresting as to be impossible to follow. The electronic textbook must ensure that these problems are addressed. Students must be given a purpose for their reading and be exposed to exercises and information about

top-down and bottom-up reading skills as well as how to use them. These exercises may be undertaken within the context of reading, or they may be presented in exercises which are to a certain extent peripheral to the act of reading.

4.8.1 Reading Strategies

Many beginning readers of foreign languages suffer the problem of paying too much attention to individual words and not enough attention to the context surrounding them (Cooper, 1984). These students tend to look up most unknown words in a dictionary instead of using clues from the context to understand them. But proficient readers use several methods simultaneously to process the text they read (Rumelhart 1976, Stanovich 1980, Perfetti 1985). On one hand, they decode the linguistic units of the text. This includes information within individual words, such as the letters, the word stems and morphological endings as well as full words and phrases. This decoding is referred to as bottom-up processing. On the other hand, they also use their experience in the real world, previous knowledge and context to make predictions about the meaning and content of the text. This is top-down processing. Using information from each approach allows good readers to process texts accurately and quickly.

Less proficient readers tend to rely on either top-down or bottom-up processing and do not switch between the approaches as often as they should (Carrell, 1988). Students who rely on a bottom-up approach often look up words in the dictionary and fail to use the knowledge of the real world which is characteristic of top-down processing. The reliance on the dictionary slows down their reading and interrupts the process of comprehension (Chan & Liu, 1992). However, bottom-up processing cannot be ignored either. Reading a highly inflected language like Russian demands that attention be paid to inflectional endings to obtain the correct meaning in some cases; readers who do not pay enough attention to these details may derive incorrect

information from the text. On the other hand, a reader who relies too much on top-down processing may get an general understanding of a text, but remain ignorant of important details.

It is often assumed that people who are proficient readers of their native languages will automatically transfer those successful skills to the reading of the target language. However, it is not clear that this transfer of skills automatically occurs. Care must therefore be taken to ensure that both skills are learned and used by all readers, even those who are good readers of their native language.

The important thing is that students have a purpose for their reading. Cooper (1984) suggests that if no purpose is evident, students are more likely to try to understand every word and nuance (although this may be actually be the stated purpose in some cases). Students need to know what they are doing and why in order to do it well. One way of informing them about the nature of their assignments is through clear instructions which precede the reading assignment and the use of interesting, relevant texts.

4.8.2 Interest of Texts

Eskey & Grabe (1988) point out that is difficult to pay proper attention to reading material, even in our native language, which we do not consider relevant or interesting. What are the chances that our students will pay attention to texts in the target language if they consider them irrelevant? Lack of interest in the reading text may be one reason that many students do not pay proper attention to the context when they read, and concentrate instead on the individual words. That is, their lack of interest in the texts they read may impede their top-down processing (which will be discussed in section 4.8.2).

Eskey & Grabe go on to stress that textbook writers must be particularly careful to provide materials of genuine interest to students, and not to expect them to put in the extra energy required to read boring or irrelevant texts. The electronic textbook can provide several different texts for certain reading assignments while requiring the student to read just one. Students will be allowed to choose from a list of several texts and need never see the ones which are not of particular interest. In addition, the availability of additional texts ensures that additional appropriate material will be always be available to highly motivated students wishing to read more. If proper care is taken to ensure a certain overlap in the vocabulary presented in each group of texts, then it does not matter which text a student chooses. Therefore, should students decide to read supplementary texts after the first, the task will not be overly demanding. Much of the vocabulary will already be familiar, making the comprehension task less tedious, even if that particular text is not particularly interesting to the student.

Another way of keeping interest in the reading material high is allowing students to control some of the content of the texts. Robinson, Underwood, Rivers, Hernández, Rudesill, and Enseñat (1985) found that allowing students a certain amount of content control improved their comprehension. For example, students were allowed to fill in the name of the protagonist in a story so that the story concerns a friend or a favorite celebrity instead of the generic, unknown people common to textbooks. Take, for example, this excerpt from Clark (1983), which concerns the fictional engineer Nikolaj Rozhdestvenskij and his family:

--Петя! Маша! Мы идём в оперу. Вы тоже хотите?

--Я хочу, --отвечает Маша. --Я оперу очень люблю.

--А я буду смотре́ть телеви́зор, --говори́т Петьа. --В 6 часов начина́ется футбо́льный матч «Дина́мо-Спарта́к». «Дина́мо--моя́ люби́мая кома́нда.

--Ну что же, --говори́т Никола́й. --Пошли́!

("Petya! Masha! We're going to the opera. Do you want to go too?

"I want to," answers Masha. "I really love the opera."

"I'm going to watch television," says Petja. The soccer match between 'Dynamo' and 'Spartak' starts at six o'clock. 'Dynamo' is my favorite team."

"Well, then," says Nikolaj, "Let's go!")

On the computer, the names will be treated as variables which are filled in by the student. The result may sometimes be hilarious. Consider that the student reading the text above is a fan of the animated television show "The Simpsons", and when prompted for the names of the members of a family, responds with Гомер, Мардж, Барт and Лиза Симпсон.

--Барт! Лиза! Мы иде́м в оперу. Вы то́же хоте́те?

--Я хочу́, --отвеча́ет Лиза. --Я оперу́ очень люби́ю.

--А я буду смотре́ть телеви́зор, --говори́т Барт.--В 6 часов начина́ется ~~футбо́льный~~ матч «Дина́мо-Спарта́к». «Дина́мо--моя́ люби́мая кома́нда.

--Ну что же, --говори́т Гомер. --Пошли́!

("Bart! Lisa! We're going to the opera. Do you want to go too?

"I want to," answers Lisa. "I really love the opera."

"I'm going to watch television," says Bart. The soccer match between 'Dynamo' and 'Spartak' starts at six o'clock. 'Dynamo' is my favorite team."

“Well, then,” says Homer, “Let’s go!”)

The resulting text provides a more memorable image of the events of the story than does the original, because the names chosen by the students presumably hold some meaning for them. Students can subsequently be encouraged to share their individual versions of the story with their classmates. Clearly, this approach is not appropriate for every reading exercise, for there are indeed times when the biography of an important figure in Russian history and culture, such as Gorbachev or Lomonsov, will need to be presented in a serious manner.

The inclusion of information about the culture of the target language may also be useful in keeping student interest level high. This need not be in written form: pictures, maps, video clips and other visual media, as well as audio clips, such as music or sounds from the culture, are valuable. This information should be made available at appropriate times to boost not only interest in the texts, but comprehension as well.

Another way to give students control over what they read involves creative reading (Wyatt, 1984). In creative reading, students control the outcomes of the story by selecting from multiple-choice possibilities. This allows students to adapt the story to their own tastes and makes them more active participants in the reading process.

4.8.3 Authentic Texts

One approach to reading which has gained increasing popularity and acceptance is the use of authentic texts for reading practice, instead of texts specifically designed for use for language learning. Materials from magazines, such as simple articles and advertisements are used, as well as other everyday materials such as timetables and menus.

These materials can be used with beginning as well as more advanced students. *Face to Face* uses authentic materials from the very first lesson. Early reading exercises

ask students to identify English language borrowings or cognates from the texts. Such a task is certainly feasible for the learner who has learned the alphabet and the sounds associated with each letter. More advanced exercises in the same textbook ask students to answer questions based on the text. Although the students are not familiar with all the grammatical structures or vocabulary in the text, the answers they are intended to give consist entirely of words which are either known to them or are cognates.

This is precisely the type of approach advocated by both Benevento (1984) and Grellet. Grellet recommends against simplifying texts for student use, warning that when the natural redundancy of the text is eliminated, it may actually make the reading more difficult. It is the exercises, she argues, not the texts, which should be graded in difficulty. That is, while the exercises at early stages may be simple, the texts should be authentic, and not simplified for easier comprehension. Finally, she suggests that authentic texts be presented in their original format: newspaper articles should be presented with their original typefaces and sizes, instead of being transferred to a standardized format. This may be easily accomplished on the computer by using a scanner to read in authentic documents. Benevento makes a less strong argument for the use of authentic materials, advocating only that “the samples of written language be those which *could* appear in, or are adapted from, real written material such as letter, reports, newspapers and magazines” (p. 5; italics mine).

However, given the complex and unfamiliar nature of the Russian syntax to the non-native reader, authentic texts should perhaps be simplified for the beginning reader. Devine (1988) suggests that this may be accomplished in part by simplifying the syntax. For Russian, this may mean manipulating the word order so that the syntax is more similar to that of English, with the subject appearing first, then the verb, and so on. Participial phrases (which are particularly complex structures generally not taught in

first-year Russian) could be simplified into clauses using *КОТОРЫЙ*, or broken down into two or more sentences. (Other measures of text simplification were discussed in section 2.2.1.) But in general, the idea is to restrict the number of different types of structures students encounter, especially in their early attempts at reading; they can be weaned gradually into recognizing and using those structures later in their training. This is by no means a new idea: teachers often employ such tactics in the speech they use in class, and the pedagogically designed texts standardly used in existing textbooks follow this model. While the idea of simplifying texts unarguably does violence to the theory that all texts presented to students should be genuine, simplified authentic texts are still a step above using contrived dialogues and texts, the main purpose of which are to present new grammatical and lexical forms.

Therefore, the electronic textbook will present a variety of types of texts: unchanged original texts, adaptations of Russian stories and themes which can be more easily read by the beginning student, and wholly artificial texts. Each type of text contributes to the student's learning in some way. Authentic texts will be used to stimulate the use of top-down reading strategies (see section 4.8.5 below), while both authentic and simplified texts will be used for bottom-up reading practice (see section 4.8.4). They both have value for the beginning learner of Russian; therefore, each will be used as appropriate. Contrived, artificial texts still have a place in presenting new grammatical and lexical material in context.

4.8.4 Bottom-Up Processing Skills

It could be argued that most of language teaching is devoted to the development of bottom-up processing skills. We ask students to read aloud, in part to demonstrate their ability in identifying words and sounds. We test them on the vocabulary which they have memorized. We ask them to fill in the blanks in grammatical exercises, to

show their knowledge of the inflectional structure of the language. All of these are subskills of bottom-up processing, and they have been discussed elsewhere in this chapter. Some exercises which specifically encourage the development of such bottom-up reading skills will be mentioned here. These exercises ask the student to work with the words and structures in the text. While their ultimate goal is to improve comprehension globally, the immediate focus is on the vocabulary and grammar and the way those structures interact to create a meaningful, coherent whole.

Eskey and Grabe (1988) suggest that one way to strengthen bottom-up processing is to ensure that learners can immediately recognize letter combinations which are characteristic of the target language. This is further strengthened by Rumelhart's claim that the recognition of letter patterns is an integral part of the reading process, one that contributes to understanding a written text just as lexical or syntactic information does. Beginning students of Russian would be expected to have a difficult time doing this, because before they can learn which letter combinations are permissible in Russian, they must become familiar with the letters of the Cyrillic alphabet. This task is further complicated by the fact that some of these letters are identical to letters in the Roman alphabet, and have the same sound while others represent a different sound.

Many consonant clusters which are common in Russian, such as the ones illustrated below, appear strange to the native speaker of English.

Russian word	Gloss	Unfamiliar cluster
ШКО́ЛА	'school'	ШК [šk]
КНИ́ГА	'book'	КН [kn]
Ксе́ния	'Ksenija (name)'	КС [ks]
ШЛА	'(she) went'	ШЛ [šl]

Once students can recognize common letter combinations such as these, they will hesitate over them less and process them more quickly. This improvement in bottom-up processing should assist in increasing their skill in reading. Instead of processing the individual letters of words, they will be able to process larger portions of words at a glance. Thus, they have more cognitive time for other reading activities, such as top-down processing.

Similar recognition exercises can be conducted with whole words. Grellet (1981) suggests some other exercises which could easily be presented on the computer. The exercises can be timed by the computer. In one exercise, students must choose a word from a list which matches a given word:

пáрта	пóсле	до	от
	лáмпа		ко
	доскá		по
	лáдно		до
	пáрта		он
	люди		но
'school desk'	'after'	'until'	'from'
	'lamp'		'towards'
	'blackboard'		'along, about'
	'okay'		'until'
	'school desk'		'he'
	'people'		'but'

Students may be asked to match expressions or phrases instead of single words. In the following exercise, students must determine whether the phrases on the left and right are identical or not.

до скóрого	до свидáния
мóжет быть	мóжет быть
Скóлько лет?	Скóлько дней?
дава́йте погово́рим	дава́йте почита́ем
вы пра́вы	вы пра́вы
ката́ться на лы́жах	ката́ться на конька́х
‘see you soon’	‘goodbye’
‘maybe’	‘maybe’
‘How many years?’	‘How many days?’
‘let’s chat’	‘let’s read’
‘you’re right’	‘you’re right’
‘ski’	‘skate’

Similarly, students may be asked to determine whether pairs of words have different or similar meanings, stimulating semantic recognition.

кни́га	уче́бник
кйоск	шко́ла
сказа́ть	говори́ть

симпатичный	добрый
завод	институт
земля	машина
'book'	'textbook'
'kiosk'	'school'
'say (perfective)'	'say (imperfective)'
'nice'	'good, kind'
'factory'	'institute'
'earth, land'	'car'

In another variation of this exercise, students might be asked to determine whether the words given are of the same word class or gender, in the same tense, aspect, or case. Grellet advocates such exercises based on claims that students whose reading speed is too slow will be easily discouraged from reading at all. Therefore, an attempt to increase their reading speed should be made. Their bottom-up processing should profit from this added speed, and these recognition exercises should aid in developing that speed.

Another bottom-up exercise deals with helping learners to determine the referents of words in the text. Such an exercise is presented in the last sections of *Venturereader* modules. These exercises provide practice with handling reference words, determining the referents of those words, and providing practice in the discourse structure of the texts. For example, one exercise might deal with pronouns and articles (such as *this*, *that*, *he*, or *she*) and ask students to identify the referents of those words.

Grellet demonstrates exercises which help learners with such relations. In these complex sentences, students must match subjects with their verbs, as well as referents to their antecedents. Given the freedom of Russian word order, especially in complex sentences, such exercises would be very appropriate for beginning students of Russian.

1. Mostly because of inflation, but also because taxes have been creeping upward, the actual buying power that people have been getting from the money in their paychecks has declined by nearly 4% over the past twelve months.

Match subject and verb.

taxes	have been creeping upward
buying power	have been getting
people	has declined

2. One index of how financially pressed Americans feel is the popularity of grocery coupons, those little pieces of paper snipped from product labels or newspaper ads that housewives have long used to save nickels and dimes at the check-out counter.

What is the subject of 'feel'?

What is the subject of 'is'?

What noun phrase does 'that' refer to?

- a) newspaper ads
- b) product labels
- c) pieces of paper
- d) popularity

The computer version could be streamlined to a great extent over the versions given above. For example, the words which must be matched ("taxes," "buying power" and

“people” in the first example, and “feel,” “is” and “that” in the second) may be highlighted. The student may then click on the word that matches it. Alternatively, the student could be asked to type the matching words.

Grellet presents a number of other exercises in this vein. However, their complexity makes them more suitable for more advanced students of Russian, and will therefore not be considered for inclusion in the first-year electronic textbook.

4.8.5 Top-Down Processing Skills

Merely telling students that they must use context in their reading is insufficient. They must be trained in the use of context, guessing, and risk-taking techniques if they are to become successful readers. These techniques will be discussed below.

The communicative movement has moved teaching away from the building blocks used in bottom-up processing to the understanding of global meaning. This perspective is a necessary one; it is the development of top-down processing skills which has traditionally received less attention in classroom practice, and which will be discussed at length below.

Proficient readers are willing to accept a certain amount of ambiguity while reading. They skip forward or go back in the text as necessary to get the context which they need. In addition, they use information external to the text, such as knowledge of the real world or personal memories. If we are to train students to be proficient readers of Russian, we must teach them to use these techniques.

The approach of skipping over portions of text until context makes unknown words clear can be used in conjunction with the occasional reference to words in an online dictionary. In addition, reading a passage multiple times aids the student in understanding unknown words. In any case, students need to be trained to identify words as they read, using what they already know about the text and about the target

language in general, rather than immediately using a dictionary to reference the word into their native language. In general, students need to adopt a more relaxed attitude regarding reading tasks. They need to learn not to worry about every single unfamiliar word or grammatical construction encountered during reading. The result will be greater global comprehension and a more pleasurable reading experience.

Probably the most common way of stimulating top-down processing is by encouraging students to use context to determine the meaning of unknown words and structures. *Venturereader*, for example, contains vocabulary exercises which use a training strategy based on Clarke & Nation (1980). These tasks encourage the student to determine the part of speech of unknown words, decide whether they have a positive or negative value, and guess the meaning of the word. Other lexical guessing strategies were discussed in the section on vocabulary (sections 4.3.3 and 4.3.3.2).

However, it is important to keep in mind that for the reading context to be usable, a certain amount of it must be readily understood by the student. That is, the text must contain a certain number of known or easily identifiable words. Therefore, reading materials must be carefully graded to the reading level of the student to avoid frustration. Additional contextual information may also be provided via pictures, sounds, or pragmatic references.

Cloze texts, which are commonly used in testing, can also be used to help students learn to guess from context. Both Carrell and Devine have suggested that cloze techniques, which are often used in testing, can be used as exercises which will improve skills in guessing from context. The cloze environment requires that students fill in an appropriate word given the surrounding context. Students who learn to make guesses in the relatively safe context of a cloze exercise can then transfer these skills to deduce the meaning of an unknown word in a reading text.

Several exercises which are intended to help students develop top-down reading strategies have received much attention in the literature. One of these exercises is Higgins' "Storyboard", which allows students to manipulate texts, rebuilding them by guessing which words are missing. Help in the form of "free" words (those provided automatically by the program as hints) is available. "Storyboard" is reported to be a highly motivating exercise which captures the attention of students. Although it does help students exercise their knowledge of the relations between words in a text (learning where words belong in sentences based on the presence of other words), it concentrates heavily on orthography rather than meaning, which puts its use as an exercise for communicative language learning in question. Whatever information the students have about the text from the outset comes from semantics; either from the title of the text (if provided), or their memory of the text, if they chose to see it first. A similar approach is used by "Textbag," discussed in Higgins & Johns (1984). This computer exercise is based on the cloze principle. However, it incorporates a game element which allows students to win points by guessing words which appropriately fit in the text. "Textbag" also gives clues on demand. However, these clues come at a price: students "buy" them with the points they get for correct answers. These clues are in the form of words which the computer fills into the text for the student. ~~This provides more context from~~ which students can guess other correct answers. Because of their questionable pedagogical value (as mentioned by several researchers) and its potential for confusing students, such exercises will not be found in this electronic textbook, although it seems to be very popular.

Scrambling exercises, which are also easily implemented on the computer, provide another way to learn to predict the order of events and elements in a text and make guesses about the content of a text. (This approach was first discussed in section

2.4.1.1.3). Several approaches are possible here. The word-scrambling activity “Disclose” (Johns, described by Fox 1984) gives students a set of eight words and punctuation marks from a sentence which they must then arrange in the correct order. This sort of exercise requires students to recognize both the parts of speech of the words as well as the potential connections between them. An example of such an exercise for Russian is illustrated in the scrambling demonstration in the pocket materials. Students drag words into their appropriate places in the sentence to create a meaningful sentence from the scrambled words. Due to the free word order of Russian, several different answers may be possible in such exercises. The alert student will use knowledge of inflections to put noun phrases, verb phrases, and prepositional phrases together. These, in turn, can be used to reconstruct the sentence rather easily. To make such an exercise more difficult, the words can be given in their dictionary forms, forcing the students to rely more heavily on semantics and less on syntactic information. Punctuation and capitalization can also be removed to make the exercise more challenging.

A similar exercise is “Jumbler” (discussed in Higgins & Johns, 1984), which scrambles the chunks or paragraphs or a text and then asks the student to put those elements in the right order. In more complicated exercises, such as Higgins’ and Johns’ “Shuffler”, the computer mixes the sentences of two texts together. The student’s task is then to unscramble the sentences into two correct, coherent texts.

One important aspect of top-down processing is risk-taking. That is, readers need to be willing to make guesses about meaning and to change those guesses in the face of later evidence which is derived either from the text or from knowledge of the real world. By approaching the reading task in this way, the reader creates a framework for understanding the individual words in a meaningful context by making guesses. This

guessing may involve analysis of syntactic structures, and not just knowledge of lexical items (Devine, 1988). The computer can aid students in learning to make such guesses. Wyatt discusses an approach wherein students are encouraged to predict the next sentence based on the preceding sentences. Even when students choose from a set of multiple-choice answers, this approach still encourages them to make guesses about the contents of the text. Such exercises are also discussed by Carrell as well as Grellet, who gives the example below. The left column contains sentences which are actually found in the text, while the right hand column provides a choice of sentences which could conceivably follow the text in the left hand column.

Sentence in real text	Possible next sentences
<p>The average person in the world now uses approximately 43,000 calories per day.</p>	<p>a) However, there are few 'average' people in the world.</p> <p>b) However, calories are essential to live.</p> <p>c) Some people may use more.</p>
<p>However, there are few 'average' people in the world.</p>	<p>a) Most people should use far less calories.</p> <p>b) The Egyptians, for instance, consume 9,200 calories a day.</p> <p>c) Some people use far more energy than that, while most use far less.</p>

Some people use far more energy than that, while most use far less.

- a) An average citizen of the so-called 'developed' countries uses 136,000 calories each day.
- b) The number should be much higher.
- c) But on the whole, everyone consumes far too many calories.

An average citizen of the so-called 'developed' countries uses 136,000 calories each day.

- a) In Japan, for instance, the average figure is 74,000 calories per day.
- b) However, more than two-thirds of the world's people live in the 'developing' areas, where the average person uses only 8,200 calories of non-metabolic energy daily.

However, more than two-thirds of the world's people live in the 'developing' areas, where the average person uses only 8,200 calories of non-metabolic energy daily.

- a) This is why it is so difficult to be an average person.
- b) This explains why one part of the world is much poorer than the other.
- c) Such vast differences are hard to comprehend.

Such vast differences are hard to comprehend.

This exercise could be presented in a less complicated way on the computer, which can introduce the next sentences as they are needed instead of placing them in an adjacent column.

Another way to facilitate guessing is teaching students to recognize the organization of reading material (Wyatt, 1991). This will allow the reader to make better predictions about where the text is going. Grellet suggests that a fun way to encourage prediction behaviors is to present students with texts in which some of the words are partially or wholly illegible. In one exercise, students are asked to reconstruct the content of a postcard where some words have been smudged. This sort of exercise could be executed quite convincingly on the computer; the defective postcard could be scanned in for authenticity. Students could type in the missing letters, and the complete text of the postcard constructed on the screen. Another variation on this exercise might be reconstructing a page of homework or a newspaper article which has been “eaten by the dog.” That is, some words or letters would be missing, and the student would fill them in according to the context that remains.

It is clear that there is an established tradition of using the computer to promote guessing and prediction skills. The electronic textbook will follow this tradition, bringing together the most interesting and successful exercise types.

4.8.6 Pre-Reading Activities

The exercises in sections 4.8.4 and 4.8.5 are principally concerned with helping students develop skills which they ~~will use~~ in the reading of longer texts. Other exercises can be conducted prior to, during and after real reading activities, and these will be discussed below.

4.8.6.1 Pre-Reading Questions

Questions help to attract and keep learners' attention, stimulate learning, and help students remember what they have read. Both questions presented before the reading task (pre-reading questions) and those presented afterward (post-reading questions) can be valuable in this regard. Research by Royer, Bates & Konold (1984) has shown that

both types of questions positively affect student performance on post-reading tests which use the same items as both as pre- and post-questions. Both kinds of questions attract student attention to certain parts of the text.

Pre-reading questions have an advantage over post-reading questions, because they encourage learners to focus on the information in the text which they will need to answer the questions. This makes them more successful in answering those questions. However, because they are concentrating on answering those specific questions, readers may not assimilate peripheral information at all. Therefore, pre-reading questions should be carefully crafted to concentrate on the information which is most important for the learner to remember. If the purpose of reading a biography is to note the important aspects of a person's life, then questions emphasizing those structures should be presented. If students are to attend to details, the questions should encourage them to read for those details. But if students are expected to express the general mood of the text, the questions should address that point. In other words, simply presenting questions for the sake of asking questions is not useful; they must have a purpose. Some relevant exercises in this vein (albeit for practicing the listening skill) were discussed in sections 4.6.2 and 4.6.3; these exercise types could be used for reading as well.

While some pre-reading questions may encourage students to look for facts in the text, others ask them to bring information outside the text into consideration. This encourages students to think about the topic at hand before they begin to read. Venturereader employs a "pre-test" which poses questions about the student's general knowledge of the topic of the passage before reading even begins. Questions may be of several types: true/false, multiple choice, or short answer. It is not important that the students find out whether their answers are correct before they proceed (Rothkopf,

1966). In fact, it is not even vital that the questions have a correct answer. It is the process of thinking about the questions, rather than the result, which aids students in this case.

4.8.6.2 Pre-Reading Exercises

Carrell (1988) stresses that comprehension questions alone are not sufficient as pre-reading activities. While questions give learners a purpose for reading the text, make guesses about its contents, and even access pertinent knowledge, they likely do not cause the student to build upon that knowledge. Other pre-reading activities are necessary if learners are to both build their background knowledge and access that knowledge as they read.

Pre-reading exercises prepare students to comprehend what they read. Carrell & Eisterhold (1988, p. 87) suggest that “asking students to manipulate both the linguistic and cultural codes (sometimes linguistically easy but culturally difficult, and vice versa) is asking too much.” This would appear to be especially true for beginning students, who are especially “word-bound” and must expend a great deal of energy processing individual words. Therefore, exercises to help students become more receptive to the content of the texts they read must be presented. The exercises must shift, at least partially, the focus of the student from vocabulary acquisition (bottom-up processing) to overall text comprehension (top-down processing). These exercises may involve scanning the text for important words or structures, examining pictures to preview the reading content, or exposure to a presentation on the target culture relevant to the reading text.

4.8.6.2.1 Using Key Words to Identify the Topic

A simple pre-reading task asks students to count the number of times a given word is used in a text. When those words are chosen appropriately, this exercise serves

to inform the student of the topic of the text (Fox, 1990). For example, we might ask students to count the number of times the nouns газета ‘newspaper’, журнал ‘magazine’, and forms of the verb покупать ‘buy’ occur in the text below.

Я смотрю в окно и вижу газетный киоск. Раньше здесь работала Тania, симпатичная молодая девушка. И все молодые люди, которые живут недалеко, покупали газеты и журналы только здесь. Они покупали газеты «Правда», «Известия», «Комсомольская правда», «Вечерняя Москва», «Советский спорт», журналы «Советский Союз», «Москва», «Октябрь», «Шахматы в СССР»... (excerpted from Kostomarov, 1987, p. 96)

“I look out the window and see the **newsstand**. A nice young woman named Tanya used to work there. And all the young men who live nearby used to **buy** their **newspapers** and **magazines** here and only here. They **bought** the **newspapers** “Pravda,” “Izvestija,” “Komsomol’skaja Pravda”, “Evening Moscow,” “Soviet Sport,” the **magazines** “Soviet Union,” “Moscow,” “October,” “Chess in the USSR”...”

Had students been asked to search for the forms of the words молодой ‘young’, советский ‘Soviet’, Москва ‘Moscow’ or здесь ‘here’, they would have found many occurrences of them as well. But these words do not inform the reader that the one of the purposes of the text is to tell about newspapers, magazines and newsstands. This pre-reading activity gets students to scan the entire text before they actually begin working with it.

4.8.6.2.2 Predicting Content

Grellet suggests exercises in which students inspect the table of contents, the title of a section or chapter, an index, or the information from a flyleaf of a book and use that information to predict the content of the text. One exercise provides a newspaper index and a set of questions based on that index. Using the index, students must determine which section of the newspaper will contain the information about the questions.

- a) Have the USA decided anything about the Teheran hostages?
- b) Is it true that Sir Norman Denning has died?
- c) Are there any Letters or Opinions about the article on the library that appeared a few days ago?
- d) What's on TV tonight?
- e) Is there a review of that new film with Anthony Quinn?
- f) Is the new Education Bill likely to be passed?

This exercise helps the students become familiar with the structure of newspapers, a topic about which they should already know something, given their experiences with newspapers in their native language. It does not require the student to know every word in the questions; students can come up with correct answers without such complete knowledge. In question (e), for example, students need not know the word “review” or know who Anthony Quinn is; the word “film” should provide enough information to tell them which newspaper section would provide this information.

Another newspaper-based exercise suggested by Grellet asks the reader to examine a headline and then to guess, by choosing from a list of choices, what the article might be about.

- Think before you jog...
- a) The pleasures of jogging.
 - b) Statistics about the number of joggers.
 - c) The dangers of jogging.
 - d) The popularity of jogging in the USA.

This sort of exercise pushes the student to think not only about what the words say, but also about what they actually mean.

4.8.6.2.3 Previewing with Cultural Information

Cultural information can also be useful, and sometimes vital, in preparing to comprehend a reading task. As Carrell and Eisterhold (1988, p. 87) point out:

“Previewing is an important activity in the reading classroom but it is not necessarily a process of simply providing a preliminary outline of what is to be read. Sometimes, it involves teaching a key concept which is culturally loaded...If one does not understand the process of purpose of a lottery, then this short story about one woman who ‘wins’ and is then killed by her neighbors will be totally incomprehensible. In this case, a discussion of lotteries before assigning the reading would be absolutely necessary.”

Providing such introductions is a good way to integrate culture into the curriculum without relegating it to a peripheral or intrusive role. Other ways of addressing culture were discussed in section 4.4.

4.8.6.2.4 Previewing with Illustrations

Previewing is a pre-reading activity which is not centered on questions. It need not even be focused exclusively on the lexical content of the text. Illustrations, especially at the early stages, can be particularly useful as indicators of the topic of the text.

Hudson (1988) conducted a study which explored the comprehension of students who were exposed to one of three reading activities. One group saw pictures prior to reading the text, another was introduced to the vocabulary of the text as a pre-reading activity, and the others received post-reading comprehension questions. The elementary and intermediate level students who viewed pictures relevant to the reading text and made predictions about the content of the text based on this visual information understood the reading texts better than students who performed the other reading activities or no reading activities at all.

Pictures may also be manipulated by students to demonstrate their understanding of important points of a text. Grellet gives an exercise consisting of a letter from someone describing a recent trip. The student's task is to rearrange accompanying photographs into an order which corresponds to the events discussed in the text. In another Grellet exercise, students read a historical document discussing the travels of various explorers, and are asked to identify on a map the path which corresponds to each explorer. (A similar exercise for Russian might be based on the travels of Cyrill and Methodius, for example.) In yet another picture-based exercise, students may be asked to match pictures with the text which best describes them. In Grellet's example, the pictures are of houses and the accompanying texts are real estate advertisements, but any pictures and narratives could be used. For example, students might be asked to match works of art or architecture with narratives describing them, providing readers with reading practice as well as cultural information. This allows students to demonstrate their understanding of the text without using words to respond, which can be especially valuable in their early study.

4.8.7 Post-Reading Activities

Just as there are activities which students can perform prior to the reading process, there are also activities which can be done after reading. Again, these may be questions or exercises. Both types of activities will be discussed below.

4.8.7.1 Post-Reading Questions

As mentioned above, post-reading questions, like pre-reading questions boost student comprehension of the information directly addressed by those questions. However, post-reading questions have an additional effect not observed with pre-reading questions: they improve performance on questions which the student has not previously seen (Hamilton, 1985; Rothkopf, 1966). Royer, Bates & Konold (1984) note that post-reading questions facilitate the acquisition of “incidental” learning, knowledge not directly addressed by the questions. They also cite research (Rothkopf and Bisbicos, 1967) which indicates that the appropriate post-questions can sensitize students to remembering certain classes of information, such as proper names or technical terms.

It is vital that post-questions require students to show their comprehension of the material, rather than let them repeat material from the text verbatim (Steinberg, 1991b). Rote repetition of material does not encourage processing of that material, but comprehension questions which ~~require processing~~ will help students integrate that knowledge into what they already know.

4.8.7.2 Post-Reading Exercises

Once the actual act of reading has been accomplished, additional exercises can be performed to integrate this reading into the knowledge which the learner already has (Carrell, 1988). If the pre-reading exercises have been successful, then this knowledge will have already been activated.

In one exercise to get students to integrate knowledge, a student might be asked to choose an appropriate title for a passage from a list after reading the passage quickly. This is really a skimming exercise, reading rapidly for a main point. The following example comes from Grellet.

Sherlock Holmes would be proud of Dorothy Perry A lucky meeting of Detroit, even though she tracked down a Violence in Detroit remarkably dim robber. Losing her handbag in a A clever policeman mugging, Ms. Perry remembered that her purse A good detective held concert tickets as well as £40. She turned up at the show a few days later with a cop on her arm--and sure enough, the mugger was sitting in her seat.

Carrell suggests discussion of the text as another powerful way of integrating new knowledge into what the learner already knows. This can be done on the computer using electronic mail or chat groups. These discussions can be further developed and refined in class.

4.8.8 Conclusion

A large number of approaches and exercises can be used to teach students to read in a foreign language. Some of these emphasize the bottom-up approach to reading: helping students to recognize letters, words, and word meanings. Others take a more global approach to the reading process, encouraging students to use context to clarify meanings and to get a global understanding of the text. Many exercises may be performed as a part of the reading task, while others may be undertaken separately. In all cases, the purpose for each exercise should be made clear to the students, so that they

may learn to incorporate the techniques they introduce into their reading even when it is being performed outside of the educational environment of the textbook.

4.9 Writing

We now come to the last language skill, writing. For beginning students, writing in Russian is a particularly challenging proposition. The Cyrillic alphabet plays no small role in this difficulty. Students must learn the mechanics of producing words and letters, both in handwriting and on the computer keyboard. Other factors contributing to the difficulty of mastering the writing skill include the imperfect mapping of the sounds of Russian onto its orthography. Students must become familiar enough with the phonological rules of the language (such as stress placement, vowel reduction, consonant devoicing, and consonant assimilation) to be able to recognize, in writing, the words they hear, and be able to reproduce them. A variety of exercises have traditionally been used to teach writing. These include dictation, which is still a very useful tool in this regard and an exercise easily administered and corrected by the computer. Translation, either of individual words in fill-in-the-blank style exercises or full sentences, is another effective way to get students to write in the target language. Although this method has fallen out of favor, it too still has value for beginning learners of language. ~~More communicative exercises, such as the writing of original~~ compositions can be easier to execute using the computer. It must also be stressed that the existence of computer and the Internet bring a whole new face to the activity of writing, since the written word is the principal medium of computer-based communication, an increasingly important activity in the real world.

4.9.1 The Complex Nature of Writing

Before we discuss the ways the computer can be used in developing the writing skill, it is important to understand why it is such a difficult one to acquire. Cohen

(1991) suggests that part of the problem lies in addressing goals at different levels. High-level goals, such as the organization of ideas and the exposition of arguments, represent one level of thinking which must be performed while writing. Middle-level goals involve the mechanics of constructing these arguments using definitions, clarifications, illustrations and other explanatory methods. Low-level goals include using correct grammar, spelling and punctuation and choosing appropriate words from the lexicon. The talent of the proficient writer lies in juggling these various levels while writing. Cohen says that good writers are better at coping with a lack of information or confusion at one level and operate on other levels instead. That is, when they are writing initial drafts, they can temporarily sacrifice perfection at one level for proficiency at another. For example, if they are unsure about a certain grammatical construction or choice of words, they are willing to put down the closest thing that comes to mind, mark it for later review, and go on expressing the ideas they want to cover. When writing in a foreign language, they may make notes in their native language to express a concept for which they do not know the words in the target language and look up the words later. Less proficient writers in this same predicament might reach immediately for a dictionary and most likely lose their train of creative thought in the process. Cohen thus argues that students should be encouraged to get their ideas down first, and then edit later as part of learning to juggle the three levels of writing.

If we are frustrated with our students' writing in Russian, (disappointed with everything from their penmanship to their spelling to their ability to put thoughts together), we must keep in mind that many of them are struggling similarly in their native language. One need only chat with the instructor of a freshman-level English class to understand that the problems are not limited to the foreign language classroom. In some cases, we may confound the student's difficulty in Russian with a general

deficiency in writing ability. We cannot take anything for granted, and sufficient aid must be provided for students learning to write. The computer may be of additional assistance in this area.

4.9.2 Handwriting and Typing

As mentioned in section 4.2.1, the computer can be used to show students how to properly form handwritten versions of Russian letters, and an example of this may be found on the diskette which comprises the pocket materials. Where the textbook, with its reliance on static pictures, must break down letters into the strokes necessary to make them and arrows to indicate the direction each stroke should take, the computer can show how each letter is formed in a more direct way, using an animated presentation.

Hand-held computers such as the Macintosh Newton[®] are programmed to interpret handwriting and convert it into typed letters. However, such a utility would be of limited use in teaching handwriting. The reason is that such conversion programs must be trained for a certain amount of time to interpret the handwriting of a given individual. It certainly would not be useful for the computer to learn to recognize Russian letters written by non-natives which Russians might not accept or recognize. Therefore, the electronic textbook will not evaluate the handwriting of students (especially since this would involve the use of an input device which is generally not included with desktop computers as standard equipment). Students will have to print out handwriting worksheets and turn them in to the teacher for evaluation.

Important as the handwriting skill is, the typing skill cannot be neglected either, since it is the primary way students will interact with the electronic textbook. An increasing number of students have good keyboarding skills, but others still type slowly, even in English. Typing will be eased by the use of a homophonic keyboard (where ϕ is typed with the F key, c is typed with with S key, and so forth). However,

learning the location of characters with no English equivalent (such as Ë, Ш, Ю and Я) remains a challenge. The electronic textbook will make available typing games and exercises to help the students become familiar with the keyboard and build reasonable speed in their typing as they learn the alphabet.

4.9.3 Translation

Is translation a useful learning tool? Various arguments have been leveled against the use of translation in the communicative curriculum. Some say that translation exercises encourage students to continually translate from the native to the target language, and never learn to think at all in the target language. It has also been suggested that translation (depending on how it is defined) is not a natural human linguistic process and that therefore it should therefore not be used as part of the language learning curriculum.

Part of the confusion on this issue stems from the fact that there are at least two skills which we refer to as translation. True translation is intended to recreate not only the meaning, but also the feeling and style of a text in another language. This often requires substantive changes to the grammatical structures. Professional translators exercise poetic and artistic license in order to make the resulting text approach the original in its overall effect. Training in this skill is clearly beyond the scope of a first-year textbook; this is not the type of translation we are asking students to perform.

When we ask beginning students to translate, what we are really asking is that they write full sentences in the target language. We want them to show that they can use lexical, semantic, syntactic and cultural concepts simultaneously. (Fill-in exercises, discussed in sections 4.4.2.3 through 4.4.2.6, ask students to perform only a subset of these skills.) We are asking them to demonstrate mastery of these skills, not to create a

piece of art. Therefore, the skill we want students to perform is inherently different in its end goal.

Translation is a complex skill, requiring knowledge and some mastery of grammatical, lexical and cultural information. However, since the content is already provided, it presents a less difficult task to the student than creative or expository writing does, which is what students eventually need to learn. If we view translation as a transitional exercise to be performed between short fill-ins and true compositional writing, it is clear that it is an activity which still has a place in teaching languages today.

As was discussed in section 4.4.2.7, many of the newer textbooks present translation exercises on a limited basis, but refrain from referring to them as such. But the exercises in books like *Голоса* and *Face to Face* do differ from the ones in older textbooks, such as Clark. They do not use a stilted version of English to encourage the use of various Russian structures. They use translation as a tool to further communicative competence.

4.9.4 Guided Writing

Just as spoken conversations can be guided, so can writing exercises. Underwood's dialogue-writing exercise (discussed in section 4.7.3) provides such guided writing opportunities. Underwood suggests that this sort of exercise can also be performed by individual students on the computer as a writing exercise. Once students have written conversations based on the cues, they can compare their versions with idealized ones pre-stored on the computer and then make changes as necessary. Students could also send their conversations to one another for comparison. Another writing exercise suggested by Underwood involves asking students to read a story and retell it in their own words. Again, the students can compare their versions to those stored on the computer or to those of their classmates.

4.9.5 Computer-based Creative Writing

The use of the computer to exercise free writing has been addressed already in sections 1.5.4 and 2.4.1.3. Suffice it here to say that the computer can be used to stimulate the creative and correct use of language.

One alternative to the microworld approaches discussed previously (section 2.4.1.3.1) is the approach of Underwood's Questions (1984). Here, the computer has information about a room with certain furnishings, but the student cannot see the room. To find out what is in the room, the student must ask questions:

Student: Are there any chairs?

COMPUTER: Yes.

Student: How many chairs are there?

COMPUTER: There are three.

Student: Where are the chairs?

COMPUTER: Two of them are under the north window, the other is to the left of the fireplace.

Student: Is there a table in the room?

COMPUTER: Yes. (p. 72)

A possible extension of this exercise would involve the objects appearing on the screen as they are mentioned and being placed in their proper places as the correct locations are identified.

4.9.6 Compositions

Students can use the computer to write compositions or to make entries into a daily journal. The computer is a convenient medium for this work, because it allows students to submit a copy of their work automatically to the instructor or to fellow students for comments and evaluation.

The daily journal gives students the opportunity to write on a regular basis. This journal need not be corrected by the instructor. Rather, it should be a place where students can experiment with the language as they please. This means that they may use vocabulary with which they are not yet comfortable, such as words they have looked up in a dictionary. Students may also take this opportunity to experiment with grammatical structures which they have recently learned. Whatever use they make of the journal, it should be a place where they can play with the language without fear of adversely affecting their class grades. If they want the instructor to make comments on the grammaticality of journal entries, they may request it, but in general, the journal is not intended as a graded activity.

Topics for journal entries will be suggested by the electronic textbook, but students will always be free to write on topics of their choice. The entries themselves need not be very long, only a few sentences. The main point is to encourage students to use the language on a daily basis for their own purposes, instead of always using it to fulfill the course requirements. This should help them to consider the use of the language as a real-world task, instead of as an academic one.

4.9.7 Electronic Communication

It could be argued that the computer itself has blurred the line we have traditionally drawn between written and spoken language. In the chat environment of the Internet, people can communicate in short written exchanges in real-time. The effect is similar to that achieved by people passing notes to one another, as they are likely to do in meetings or classes. The difference is that many people can be involved in the discussion and that the participants may be separated in space (and even in time). Due to the immediate nature of the responses, much of the formal nature traditionally associated

with written correspondence is lost, and many of the conventions of spoken language are adopted in their place.

As was discussed in section 2.4.1.3.2, the computer can be used in chat or MOO/MUD environments to connect learners of the language to each other and even to native speakers of the language. They will practice writing the language to each other. The immediate nature of the exchanges will help them learn to be spontaneous in their use of the language and value semantic content over grammatical form. This is good practice for them, since much of their other work will concentrate so much on correct grammar. Therefore, the computer can be used to help students master the communicative aspect of the writing skill as well as provide students with the opportunity to get to know native speakers of Russian through the intermediary of the computer.

Chapter 5: Demonstration and Conclusion

The goal of this dissertation has been to determine what the Russian language textbook of the future might look like, given the strengths of the computer and the results of research into language pedagogy and computer-based education. It is not only possible to envision the textbook of the future--it is vital to the future of language education. What has been proposed here is one possible view of the future of education, its form guided by the results of research on computer-assisted language learning. The vision presented here is a well-organized multimedia presentation of educational materials.

5.1 Available Technology

The majority of the tools necessary to create the textbook proposed here already exist. Software such as Macromedia Director[®], Authorware[®] and Apple's HyperCard[®] can be used to present the materials outlined in the descriptions of the exercises and presentations of the electronic textbook. But other, more versatile software, just now coming into widespread use, is likely to supplant these existing packages.

In order for the electronic textbook to be widely used and accepted, it must be able to transcend platforms. That is, it must be as accessible by the user of a Macintosh[®] as it is to the owner of a machine running Windows[®]. The Internet and the software packages and computer languages associated with it will play a key role in making the electronic textbook such a universal application.

The Internet, including the World Wide Web, is an arena which truly crosses platforms. People working on Macintoshes can successfully send electronic mail to others using Windows-based machines without making allowances for this platform difference⁵. Pages on the World Wide Web can be read by anyone with a browser, and

⁵It is true that the encodings of special characters used in foreign languages differ across platforms.

browsers such as Netscape and Mosaic, as well as web page creation programs, are available for all platforms, in some cases at no cost. Programming languages such as Perl and Java are being used to bring more multimedia capabilities to Web pages. In addition, the Web is becoming increasingly more interactive, allowing users to run searches or to submit information. The World Wide Web is becoming an increasingly more attractive home for the electronic textbook. It provides more flexibility than CD-ROMS, which, once "burned" (or pressed) cannot be changed. Placing the textbook on the Web also means that users have easy access to it, since it does not require a password in order to use it, as is often the case with materials housed on regular mainframes.

The Web continues to evolve as a resource. Every day, new programs make it possible to deliver more innovative, interactive educational materials across platforms. The tools available now, in May 1996, will very likely appear extremely primitive to us in just a few years (or even months) from now. The world of electronic communication may experience yet more changes before the textbook of the future comes to light, and its creators must therefore be extremely flexible as they work.

5.2 The Demonstration

The diskette (see pocket materials) which accompanies this dissertation contains several demonstrations of software described here. It is clearly outside the scope of the dissertation to create any substantial portion of the envisioned electronic textbook. However, certain demonstrations have been included in this appendix to illustrate some of the capabilities of the electronic textbook.

However, the advent of the universal encoding system, called Unicode, should be of great assistance in this regard, eliminating the different systems in the future.

Some of the teaching approaches discussed in this dissertation could indeed be delivered via paper-based or in-class presentations. However, they may not be in common use as part of the everyday teaching for a variety of reasons. Some simply demand the manipulation of too many items: a large number of pages, color photocopies, or simply too many pieces to be effectively handled in the classroom. Tasks which fit this description can be handled much more effectively by the computer. On the other hand, extremely dynamic presentations and exercises, such as those which provide extra information or help at the student's request, or give specific feedback in response to student errors, are not viable as paper-based homework. While such exercises are theoretically possible as one-on-one exercises, teachers do not have enough time to give such personal attention on a regular basis. But the computer can be ready to perform such tasks whenever the student is ready to take them on.

The demonstrations included on the diskette have been written in HyperCard and therefore may only be run on Macintosh machines equipped with HyperCard or HyperCard Player. This does not mean that the electronic textbook will be HyperCard-based; the demonstration uses HyperCard because it is the application with which the author is currently most familiar.

One of the modules in the appendix is a handwriting demonstration which was described in sections 4.2.1 and 4.9.2. It is a dynamic presentation of the formation of the letters of the alphabet. Instead of trying to see tiny numbers and arrows pointing out stroke order and direction, students can see the writing of each of the letters on the screen, and then try to write them on paper. (One might consider letting them trace the letters on the screen using the mouse, but the mouse is a very awkward tool for this sort of work. Therefore, it is probably better to let students write on paper, as they would be asked to do in reality.)

The demonstration of dragging (discussed in sections 2.4.1.1.2 and 4.8.5) is presented in both the module entitled “Dragging” as well as the “Reading” module. Dragging can be used to create sentences from a set of words or a coherent text from a set of sentences. This sort of task is awkward to execute with paper-based materials, since it requires odd tasks such as cutting the words apart so that they can be put together or drawing lines to indicate a match between two pieces of information. The click-and-drag function of the computer makes such an exercise feasible and quick to perform.

The computer also makes the use of pictures or videos as cues for exercises possible, as discussed in section 1.5.5.3. The demonstration called “Sentences” asks students to construct sentences based largely on pictures. Tracking of student responses is also demonstrated in this section, showing how numerous incorrect answers of a single type can be counted and then lead the computer to provide a review module addressing a specific problem. These techniques were discussed in sections 1.4 and 2.5.5.1.

The demonstration on imperatives shows how the computer can present new materials in a graphic and interactive way which is very different from what a paper-based presentation can provide. This type of presentation was discussed in sections 2.2.1.1 and 3.3.2. The advantages of presenting new materials in small doses was discussed in section 2.2.4, and this demonstration shows how students may be gradually led into the correct construction of the forms of the imperative mood. In addition, this presentation is based on the student’s prior knowledge of present tense forms to construct the imperative. This use of prior knowledge to construct new knowledge was discussed in section 4.4.1.3.

Finally, the hypertext approach will be demonstrated in the section on “Reading”. The strengths of hypertext were discussed in sections 2.2.2.3 and 3.1.2.3.

Here, hypertext will guide the student in the reading of a poem. Poems are particularly problematic to the beginning reader of Russian due to the free word order which is commonly used. The hypertext approach allows students to see information about each word and how it relates to the other words in the poem. The poem is introduced by a sequence of questions and comments which help the student to think about the topic of the poem before reading even begins. The use of advance organizers such as this was advocated in section 1.2.1.

5.3 Beyond the Textbook

Providing students with a textbook which uses the latest teaching technologies does not guarantee them a good education. One lesson which teachers and textbook designers must keep in mind is that no materials, no matter how well constructed or uniquely suited to the level of the learner, will be successful if students do not have a desire to learn. All new teaching methodologies and approaches which promise to create competent users of a language are doomed to failure if students are not willing participants in the learning process.

Another important ingredient for successful learning is the cooperation of a good instructor. By themselves, no materials, not even those provided by the electronic textbook, will motivate all students to learn. ~~An active and involved teacher can do much to create willing learners.~~ Many learners will look to their teachers and fellow students for inspiration and courage in the process of language learning. The teachers must be sympathetic to their needs. Even more importantly, they must be familiar with the materials which the students are using. If they are not, they will be much less capable of addressing the questions which students will raise during class time.

The electronic textbook is also intended to be flexible and usable in a variety of ways. Instructors should be allowed to select which portions of it they wish to use, to

ignore other sections and to add or modify modules as their needs dictate. This is not a new idea; instructors have always been free to use paper-based textbooks as they see fit. The electronic textbook, however, has the capability to go further in this regard. The materials instructors add to the textbook will not be peripheral or supplementary from the point of view of the student. From the students' point of view, they will blend in and be just like the other textbook materials. Compare this to the photocopied handouts which often comprise the supplementary materials used by teachers today. These materials are easily misplaced or destroyed and are often kept separately from other course materials. In addition, the electronic textbook makes it very easy for other instructors to examine and use new materials designed by other instructors, even if they are employed at a different institution. In other words, the electronic textbook will be a collaborative effort of a great number of people. It will be a living, changing entity, not one fixed in a single form.

Another lesson which must be learned is that just because a technology or learning exists does not mean that it must be used (Pennington, 1993). Methodologies must be appropriate to the audience and the overall style of teaching. Trying to force a teaching technique into a situation where it is not appropriate does not make better teaching. Indeed, as we have seen, some uses of technology may be counterproductive to the learning process. The on-line dictionary as it is normally envisioned is a good example. While today's technology could allow students to click on a word and automatically see a translation, does this utility really help students learn the language? It may help them read in the text in question, but will they retain this information for later use? If the answer to these questions is "no," then we must question the value of such a function as an educational tool. The tools which we provide to the learners of a

language must help make them more active and productive learners, not more passive ones. This question has been posed throughout the sections of this dissertation.

Another goal of this dissertation has been to demonstrate a number of teaching approaches to accommodate a wide variety of skills, talents, goals, and expectations about language learning. A wide variety of approaches gives individual learners the opportunity to learn in a way that suits them best. Individuals each learn in their own way, and every student brings different experiences to the learning process. The textbook of the future must, to some extent, adapt itself to the needs of each individual. Again, while teachers can do this one-on-one with students, there is often not enough time to do so. Paper- and tape-based materials are too inflexible for such an approach: hundreds of pages and hundreds of minutes of tape would have to be provided for each student in order to provide the individualization which the computer can provide.

A great deal of research remains to be done in the fields of language pedagogy, computer-based education and computer-assisted language learning. In fact, many of the questions which have been considered in this dissertation have yet to be definitively answered by the research literature. The electronic textbook promises to be a great help in pursuing research in these areas. The textbook can be used as a laboratory, treating students to a variety of educational approaches and recording the results. Such experimentation need not interfere with normal student work. The results can be later used to create more appropriate and useful materials. In this way, the electronic book will serve as a laboratory for the improvement of language teaching.

As difficult as it is to imagine the structure of the textbook of tomorrow, the shape of the university in which it will be used is even more difficult to envision. Today, the draw of distance education is becoming stronger. An increasing number of university students today do not fall within the traditional 18-to-22 age range. That is,

many of today's students start their university studies later and take more than four years to graduate. Nor are these students devoted entirely to their studies; most of them have jobs and families which demand much of their time and attention. They also have different expectations of their university experience than do younger students. Instead of a general education, they may be seeking specialized training in one area. In other words, the needs of the student population are becoming increasingly diverse, as Brecht and Walton (1995) point out, and they are looking to educators to serve these needs.

At the same time, universities nationwide are experiencing a scarcity of funding. Both teaching faculty and support staff are being cut. The long-term effects of the changes currently taking place are unpredictable. Contact hours between students and instructors may be reduced, in theory allowing instructors to teach more classes and to serve more students. Students may find that the Internet is the only way to reliably communicate with their instructors. Although it is not the intended use, the services of the electronic textbook may be seen as a way to make up for that lost contact time. In addition, computer-based distance learning will likely continue to grow. Since students in these courses meet with their instructors rarely (if ever), the importance of computer-based communicative activities will be even greater than in more traditional classes. This would be an ideal situation for the electronic textbook. _____

It is clear that the electronic textbook cannot be created by one person working alone. It requires the expertise of a number of people: native speakers of Russian, teachers of Russian, specialists in the areas of interface design, graphic artists, not to mention specialists in language pedagogy and educational technology. Some individuals would be capable of playing more than one of these roles, but in general, it will be only via team effort that the electronic textbook will ever become a reality.

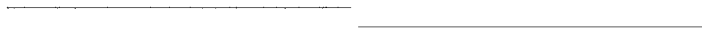
One of the most exciting promises of the electronic textbook is its capacity as a laboratory for further research. As was mentioned at various points in the dissertation, there remain many questions of language pedagogy and computer-assisted language learning which warrant further research. The electronic textbook will provide a forum which will allow such research to take place. The results of this research will affect the future look of the electronic textbook, allowing it to change as necessary.

5.4 Conclusion

The principal aim of this dissertation was to examine research in the fields of language pedagogy, computer-based instruction, and computer-assisted language learning and to apply this information to the Russian language first-year teaching curriculum in American universities in order to determine the shape of a computer-based textbook of Russian. This electronic textbook, which is the logical next step for language education, will incorporate the technological advances to which our students are becoming increasingly accustomed. It will integrate a wide range materials in a way not possible with today's media. It will provide a laboratory for future research into language education. Finally, it will represent a plastic, ever-changing entity which individual instructors will be able to modify as the needs of their students change.

Technology today is advancing at an astounding rate. Better hardware and software packages are being developed every day. Unfortunately, educators have been very slow to integrate these new tools into their teaching. Part of the reason for this is that it has not been clear how the technology can best be used to promote better education. It is not acceptable to simply use technology in teaching merely because it exists, or because it provides monetary gain. The use of technology must be principled. This dissertation has examined the new technology, as well as the wide body of research on learning, in order to provide guidance into integrating technology into education.

With the help of knowledge roadmaps such as this one, teachers will follow a clearer path into the future of education.



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Appendix A: Contexts for Conversations

List of Generic Cultural Contexts (from Benevento, 1984; original source: Indiana Department of Education and Indiana University Office of School Programs, working document, 1983.)

Travel/Transportation

Long distance travel
Travel within a country
Getting around in a city
Obtaining lodging
Famous places to visit
Foods and meals outside the home
Shopping/Money
Telling time
A trip around the target-language speaking world

School

The classroom
The educational system
Levels
Courses of study
Grading/Promotion
Extra-curricular activities

The Family and the Home

Family relationships
Living quarters
Food and meals
Celebrations/Outings
Beliefs and values
Family responsibilities

Politics and History

Form(s) of government
Highlights of history
Famous historical figures

The Target Language in the World

Geography
Ethnic influence in the U.S.
Political influence
Economic/Scientific influence
Linguistic influence
Cultural influence

Fine Arts

Literature: Authors/Poets/Genres
Visual arts/artists
Dance
Music: Composers, Performers
Folklore
Film

Youth

Roles of children
In the family
In society
Children's toy/games
Boy-girl relationships
Expectations

World of Work

Professions and jobs

Work ethic(s)

Places of work

Products and services

Careers involving foreign-language skills

Leisure Time

Vacations

Sports

Concerts

Drama

TV/Radio

Parties

Spare time at home

Meeting Personal Needs

Telephone

Shopping

Obtaining services

"Small talk"

Expressing emotions/feelings

Understanding nonverbal language

Clothing

Appendix B: Word Frequency Counts

This appendix contains the word frequency list which was compiled from the three word frequency counts as discussed in section 4.3.1.1. In the tables following, an indication of III next to a word indicates that it occurred in the the Shteinfeldt list, II signifies the Lönngren list, and 3 represents the Zazorina list.

и	Ш	Л	3	наш	Ш	Л	3
в	Ш	Л	3	то́лько	Ш	Л	3
на	Ш	Л	3	мочь	Ш	Л	3
не	Ш	Л	3	бы	Ш	Л	3
он	Ш	Л	3	ещё	Ш	Л	3
с	Ш	Л	3	тако́й	Ш	Л	3
я	Ш	Л	3	год	Ш	Л	3
э́тот	Ш	Л	3	для	Ш	Л	3
быть	Ш	Л	3	говори́ть	Ш	Л	3
что	Ш	Л	3	друго́й	Ш	Л	3
а	Ш	Л	3	уже́	Ш	Л	3
весь	Ш	Л	3	знать	Ш	Л	3
как	Ш	Л	3	до	Ш	Л	3
тот	Ш	Л	3	да	Ш	Л	3
э́то	Ш	Л	3	како́й	Ш	Л	3
о́н и	Ш	Л	3	и́ли	Ш	Л	3
о́на	Ш	Л	3	когда́	Ш	Л	3
к	Ш	Л	3	вре́мя	Ш	Л	3
ты	Ш	Л	3	пе́рвый	Ш	Л	3
мы	Ш	Л	3	э́сли	Ш	Л	3
но	Ш	Л	3	себя́	Ш	Л	3
у	Ш	Л	3	чтобы	Ш	Л	3
за	Ш	Л	3	де́нь	Ш	Л	3
из	Ш	Л	3	не́т	Ш	Л	3
ко́торый	Ш	Л	3	кто	Ш	Л	3
от	Ш	Л	3	большо́й	Ш	Л	3
о	Ш	Л	3	челове́к	Ш	Л	3
свой	Ш	Л	3	де́ло	Ш	Л	3
всё	Ш	Л	3	са́мый	Ш	Л	3
же	Ш	Л	3	рука́	Ш	Л	3
сказа́ть	Ш	Л	3	о́чень	Ш	Л	3
так	Ш	Л	3	жизнь	Ш	Л	3
о́ди́н	Ш	Л	3	да́же	Ш	Л	3
во́т	Ш	Л	3	ну	Ш	Л	3
				но́вый	Ш	Л	3

сам	Ш	Л	3	слово	Ш	Л	3
статья	Ш	Л	3	вода	Ш	Л	3
люди	Ш	Л	3	глаз	Ш	Л	3
школа	Ш	Л	3	после	Ш	Л	3
два	Ш	Л	3	потом	Ш	Л	3
работа	Ш	Л	3	нужный	Ш	Л	3
идти	Ш	Л	3	сторона	Ш	Л	3
сейчас	Ш	Л	3	много	Ш	Л	3
раз	Ш	Л	3	думать	Ш	Л	3
ли	Ш	Л	3	хорошо	Ш	Л	3
ни	Ш	Л	3	оно	Ш	Л	3
мой	Ш	Л	3	страна	Ш	Л	3
при	Ш	Л	3	тут	Ш	Л	3
без	Ш	Л	3	пока	Ш	Л	3
каждый	Ш	Л	3	земля	Ш	Л	3
где	Ш	Л	3	тысяча	Ш	Л	3
видеть	Ш	Л	3	несколько	Ш	Л	3
хотеть	Ш	Л	3	завод	Ш	Л	3
можно	Ш	Л	3	последний	Ш	Л	3
под	Ш	Л	3	ничто	Ш	Л	3
здесь	Ш	Л	3	через	Ш	Л	3
надо	Ш	Л	3	свет	Ш	Л	3
теперь	Ш	Л	3	хотя	Ш	Л	3
есть	Ш	Л	3	смотреть	Ш	Л	3
дом	Ш	Л	3	высокий	Ш	Л	3
пойти	Ш	Л	3	ваш	Ш	Л	3
более	Ш	Л	3	рабочий	Ш	Л	3
товарищ	Ш	Л	3	стоять	Ш	Л	3
ведь	Ш	Л	3	сила	Ш	Л	3
советский	Ш	Л	3	класс	Ш	Л	3
место	Ш	Л	3	народ	Ш	Л	3
работать	Ш	Л	3	тоже	Ш	Л	3
должен	Ш	Л	3	спросить	Ш	Л	3
город	Ш	Л	3	тогда	Ш	Л	3
там	Ш	Л	3	дать	Ш	Л	3

колхóз	Ш	Л	3	лицó	Ш	Л	3
потому́	Ш	Л	3	стол	Ш	Л	3
дéлать	Ш	Л	3	давáть	Ш	Л	3
лишь	Ш	Л	3	понимáть	Ш	Л	3
три	Ш	Л	3	глáвный	Ш	Л	3
хорóший	Ш	Л	3	случáй	Ш	Л	3
вопрóс	Ш	Л	3	мáма	Ш	Л	3
друг	Ш	Л	3	сидéть	Ш	Л	3
борьбá	Ш	Л	3	стáрший	Ш	Л	3
имéть	Ш	Л	3	конéц	Ш	Л	3
жить	Ш	Л	3	сегóдня	Ш	Л	3
труд	Ш	Л	3	остáться	Ш	Л	3
чем	Ш	Л	3	знáчить	Ш	Л	3
сдéлать	Ш	Л	3	мир	Ш	Л	3
почтí	Ш	Л	3	дéти	Ш	Л	3
бóльше	Ш	Л	3	велíкий	Ш	Л	3
вторóй	Ш	Л	3	совсém	Ш	Л	3
всегдá	Ш	Л	3	кнíга	Ш	Л	3
головá	Ш	Л	3	дéвушка	Ш	Л	3
конéчно	Ш	Л	3	óбщий	Ш	Л	3
мéжду	Ш	Л	3	уходíть	Ш	Л	3
прийтí	Ш	Л	3	мáленький	Ш	Л	3
двáдцать	Ш	Л	3	вдруг	Ш	Л	3
войнá	Ш	Л	3	íменно	Ш	Л	3
пéред	Ш	Л	3	однáко	Ш	Л	3
дверь	Ш	Л	3	входíть	Ш	Л	3
казáться	Ш	Л	3	пóле	Ш	Л	3
мáшíна	Ш	Л	3	начáть	Ш	Л	3
взять	Ш	Л	3	поня́ть	Ш	Л	3
кóмната	Ш	Л	3	пять	Ш	Л	3
учítься	Ш	Л	3	сíльный	Ш	Л	3
оказáться	Ш	Л	3	любíть	Ш	Л	3
над	Ш	Л	3	отвéтить	Ш	Л	3
почему́	Ш	Л	3	вáжный	Ш	Л	3
лúчий	Ш	Л	3	уйтí	Ш	Л	3

писа́ть	Ш	Л	3	иску́ство	Ш	Л	3
писа́мо	Ш	Л	3	нико́то	Ш	Л	3
ви́д	Ш	Л	3	мину́та	Ш	Л	3
сте́кло	Ш	Л	3	а́рмия	Ш	Л	3
просто́	Ш	Л	3	сно́ва	Ш	Л	3
пу́ть	Ш	Л	3	счита́ть	Ш	Л	3
ма́ть	Ш	Л	3	окно́	Ш	Л	3
ле́гкий	Ш	Л	3	вся́кий	Ш	Л	3
вме́сте	Ш	Л	3	це́лый	Ш	Л	3
посмотре́ть	Ш	Л	3	найти́	Ш	Л	3
по́лный	Ш	Л	3	пройти́	Ш	Л	3
вы́йти	Ш	Л	3	изве́стный	Ш	Л	3
наза́д	Ш	Л	3	разви́тие	Ш	Л	3
оте́ц	Ш	Л	3	рассказа́ть	Ш	Л	3
часть	Ш	Л	3	час	Ш	Л	3
близки́й	Ш	Л	3	па́ртия	Ш	Л	3
уж	Ш	Л	3	увиде́ть	Ш	Л	3
го́лос	Ш	Л	3	наприме́р	Ш	Л	3
доро́га	Ш	Л	3	организа́ция	Ш	Л	3
же́нщина	Ш	Л	3	живо́й	Ш	Л	3
нау́ка	Ш	Л	3	тре́тий	Ш	Л	3
ста́рый	Ш	Л	3	ра́зный	Ш	Л	3
нельзя́	Ш	Л	3	жда́ть	Ш	Л	3
пра́вда	Ш	Л	3	что́-то	Ш	Л	3
у́лица	Ш	Л	3	ско́лько	Ш	Л	3
широ́кий	Ш	Л	3	молодо́й	Ш	Л	3
твой	Ш	Л	3	ру́сский	Ш	Л	3
реше́ть	Ш	Л	3	пора́	Ш	Л	3
отноше́ние	Ш	Л	3	лес	Ш	Л	3
получи́ть	Ш	Л	3	возмо́жность	Ш	Л	3
ка́мень	Ш	Л	3	выходи́ть	Ш	Л	3
бу́дто	Ш	Л	3	нога́	Ш	Л	3
слы́шать	Ш	Л	3	ино́й	Ш	Л	3
проти́в	Ш	Л	3	произво́дство	Ш	Л	3
сра́зу	Ш	Л	3	сто	Ш	Л	3

куда	Ш	Л	3	быва́ть	Ш	Л	3
художник	Ш	Л	3	мысль	Ш	Л	3
четы́ре	Ш	Л	3	и́м я	Ш	Л	3
слу́шать	Ш	Л	3	фо́рма	Ш	Л	3
сре́дй	Ш	Л	3	нача́ло	Ш	Л	3
опя́ть	Ш	Л	3	бо́яться	Ш	Л	3
бе́лый	Ш	Л	3	институ́т	Ш	Л	3
реше́ние	Ш	Л	3	вече́р	Ш	Л	3
республика	Ш	Л	3	тяжё́лый	Ш	Л	3
при́нять	Ш	Л	3	усло́вие	Ш	Л	3
ночь	Ш	Л	3	о́браз	Ш	Л	3
со́бственный	Ш	Л	3	явля́ться	Ш	Л	3
вести́	Ш	Л	3	настоя́щий	Ш	Л	3
воо́бще	Ш	Л	3	движе́ние	Ш	Л	3
вое́нный	Ш	Л	3	план	Ш	Л	3
давно́	Ш	Л	3	прийти́сь	Ш	Л	3
кро́ме	Ш	Л	3	пре́жде	Ш	Л	3
начина́ть	Ш	Л	3	братъ	Ш	Л	3
крупный	Ш	Л	3	со́рок	Ш	Л	3
хоте́ться	Ш	Л	3	ходи́ть	Ш	Л	3
приро́да	Ш	Л	3	узна́ть	Ш	Л	3
бог	Ш	Л	3	из-за	Ш	Л	3
сове́т	Ш	Л	3	ма́ло	Ш	Л	3
взгляд	Ш	Л	3	молча́ть	Ш	Л	3
че́рный	Ш	Л	3	красный	Ш	Л	3
газета́	Ш	Л	3	просто́й	Ш	Л	3
о́бщество	Ш	Л	3	станови́ться	Ш	Л	3
тру́дный	Ш	Л	3	глубо́кий	Ш	Л	3
исто́рия	Ш	Л	3	поэ́тому	Ш	Л	3
чита́ть	Ш	Л	3	зада́ча	Ш	Л	3
называ́ть	Ш	Л	3	председа́тель	Ш	Л	3
любо́й	Ш	Л	3	река́	Ш	Л	3
хозяйство	Ш	Л	3	рядом	Ш	Л	3
во́здух	Ш	Л	3	лежа́ть	Ш	Л	3
госуда́рство	Ш	Л	3	помо́чь	Ш	Л	3

за́чем	Ш	Л	3	нахо́дятся	Ш	Л	3
про	Ш	Л	3	о́коло	Ш	Л	3
интерéсный	Ш	Л	3	группа	Ш	Л	3
о́чередь	Ш	Л	3	ме́ра	Ш	Л	3
никогда́	Ш	Л	3	положе́ние	Ш	Л	3
со́лнце	Ш	Л	3	соверше́нно	Ш	Л	3
наконе́ц	Ш	Л	3	моме́нт	Ш	Л	3
райо́н	Ш	Л	3	власть	Ш	Л	3
о́собый	Ш	Л	3	постави́ть	Ш	Л	3
начина́ться	Ш	Л	3	та́кже	Ш	Л	3
область	Ш	Л	3	спать	Ш	Л	3
отвеча́ть	Ш	Л	3	спра́шивать	Ш	Л	3
нача́льник	Ш	Л	3	шаг	Ш	Л	3
три́дцать	Ш	Л	3	прие́хать	Ш	Л	3
внима́ние	Ш	Л	3	сюда́	Ш	Л	3
де́сять	Ш	Л	3	приходи́ться	Ш	Л	3
кома́нда	Ш	Л	3	де́йствие	Ш	Л	3
язы́к	Ш	Л	3	ход	Ш	Л	3
бе́рег	Ш	Л	3	век	Ш	Л	3
необходи́мый	Ш	Л	3	подо́йти	Ш	Л	3
карти́на	Ш	Л	3	зате́м	Ш	Л	3
комите́т	Ш	Л	3	де́рево	Ш	Л	3
никако́й	Ш	Л	3	смысл	Ш	Л	3
гость	Ш	Л	3	сад	Ш	Л	3
появи́ться	Ш	Л	3	ряд	Ш	Л	3
верну́ться	Ш	Л	3	чу́ть	Ш	Л	3
ма́лый	Ш	Л	3	интерéс	Ш	Л	3
иногда́	Ш	Л	3	вещь	Ш	Л	3
по́мнить	Ш	Л	3	вои́ти	Ш	Л	3
мо́ре	Ш	Л	3	занима́ться	Ш	Л	3
душа́	Ш	Л	3	сей	Ш	Л	3
пусть	Ш	Л	3	жена́	Ш	Л	3
разговóр	Ш	Л	3	показа́ть	Ш	Л	3
двор	Ш	Л	3	результáт	Ш	Л	3
ме́сяц	Ш	Л	3	по́мощь	Ш	Л	3

семья	Ш	Л	3	строительство	ШШ	Л	3
число	Ш	Л	3	народный	ШШ	Л	3
прямо	Ш	Л	3	уметь	ШШ	Л	3
глядеть	Ш	Л	3	цель	ШШ	Л	3
далекó	Ш	Л	3	стóить	ШШ	Л	3
стенá	Ш	Л	3	создáть	ШШ	Л	3
дáльше	Ш	Л	3	квартíра	ШШ	Л	3
сын	Ш	Л	3	трéбовать	ШШ	Л	3
замéтить	Ш	Л	3	написáть	ШШ	Л	3
порядок	Ш	Л	3	слéдовать	ШШ	Л	3
сёрдце	Ш	Л	3	вспóмнить	ШШ	Л	3
игрáть	Ш	Л	3	огóнь	ШШ	Л	3
происхóдить	Ш	Л	3	закóн	ШШ	Л	3
рубль	Ш	Л	3	срédний	ШШ	Л	3
миллиóн	Ш	Л	3	причíна	ШШ	Л	3
речь	Ш	Л	3	инáче	ШШ	Л	3
вокруг	Ш	Л	3	отвёт	ШШ	Л	3
прáво	Ш	Л	3	бежáть	ШШ	Л	3
социалистический	Ш	Л	3	вéтер	ШШ	Л	3
дéньги	Ш	Л	3	харáктер	ШШ	Л	3
общéственный	Ш	Л	3	дорогóй	ШШ	Л	3
начáться	Ш	Л	3	помогáть	ШШ	Л	3
основнóй	Ш	Л	3	растí	ШШ	Л	3
рáзве	Ш	Л	3	слóвно	ШШ	Л	3
снег	Ш	Л	3	судьбá	ШШ	Л	3
похóжий	Ш	Л	3	оставáться	ШШ	Л	3
бúдуший	Ш	Л	3	впервúе	ШШ	Л	3
связь	Ш	Л	3	óпыт	ШШ	Л	3
командíр	Ш	Л	3	чúвство	ШШ	Л	3
прихóдить	Ш	Л	3	úтро	ШШ	Л	3
лíчный	Ш	Л	3	успéть	ШШ	Л	3
коллектив	Ш	Л	3	получáть	ШШ	Л	3
продолжáть	Ш	Л	3	серьёзный	ШШ	Л	3
человéческий	Ш	Л	3	дирéктор	ШШ	Л	3
материáл	Ш	Л	3	красíвый	ШШ	Л	3

волна́	Ш	Л	3	уча́сток	Ш	Л	3
проходи́ть	Ш	Л	3	культу́ра	Ш	Л	3
небольшо́й	Ш	Л	3	пыта́ться	Ш	Л	3
оба́	Ш	Л	3	вста́ть	Ш	Л	3
научный	Ш	Л	3	предста́вить	Ш	Л	3
подня́ть	Ш	Л	3	свободный	Ш	Л	3
средство́	Ш	Л	3	подходи́ть	Ш	Л	3
различный	Ш	Л	3	ка́чество	Ш	Л	3
четвёртый	Ш	Л	3	хозяйин	Ш	Л	3
шесть	Ш	Л	3	оста́вить	Ш	Л	3
уда́ться	Ш	Л	3	рост	Ш	Л	3
инжене́р	Ш	Л	3	тэ́хника	Ш	Л	3
хоть	Ш	Л	3	принести́	Ш	Л	3
сло́жный	Ш	Л	3	успе́х	Ш	Л	3
лист	Ш	Л	3	рабо́тник	Ш	Л	3
не́бо	Ш	Л	3	ока́зываться	Ш	Л	3
ребёнок	Ш	Л	3	киломе́тр	Ш	Л	3
э́хать	Ш	Л	3	знако́мый	Ш	Л	3
де́йствовать	Ш	Л	3	междунаро́дный	Ш	Л	3
представля́ть	Ш	Л	3	снача́ла	Ш	Л	3
забы́ть	Ш	Л	3	собира́ться	Ш	Л	3
сли́шком	Ш	Л	3	деся́ток	Ш	Л	3
край	Ш	Л	3	кора́бль	Ш	Л	3
ве́рить	Ш	Л	3	прекрасный	Ш	Л	3
предприя́тие	Ш	Л	3	попа́сть	Ш	Л	3
до́брый	Ш	Л	3	встре́ча	Ш	Л	3
хлеб	Ш	Л	3	ста́нция	Ш	Л	3
иска́ть	Ш	Л	3	ста́рик	Ш	Л	3
откры́ть	Ш	Л	3	держáть	Ш	Л	3
еди́нственный	Ш	Л	3	зал	Ш	Л	3
уго́л	Ш	Л	3	па́лец	Ш	Л	3
назва́ть	Ш	Л	3	пока́зывать	Ш	Л	3
учёный	Ш	Л	3	приме́р	Ш	Л	3
бума́га	Ш	Л	3	вперёд	Ш	Л	3
длинный	Ш	Л	3	встре́тить	Ш	Л	3

зелёный	Ш	Л	3	кабинёт	Ш	Л	3
гото́вый	Ш	Л	3	туда́	Ш	Л	3
принимáть	Ш	Л	3	привести́	Ш	Л	3
останови́ться	Ш	Л	3	положи́ть	Ш	Л	3
пить	Ш	Л	3	вы́звать	Ш	Л	3
па́мять	Ш	Л	3	откры́тый	Ш	Л	3
гора́	Ш	Л	3	пожалу́й	Ш	Л	3
програ́мма	Ш	Л	3	чу́вствовать	Ш	Л	3
неде́ля	Ш	Л	3	теа́тр	Ш	Л	3
сче́т	Ш	Л	3	появля́ться	Ш	Л	3
холо́дный	Ш	Л	3	горя́чий	Ш	Л	3
подня́ться	Ш	Л	3	вме́сто	Ш	Л	3
госуда́рственный	Ш	Л	3	прово́дить	Ш	Л	3
равно́	Ш	Л	3	метр	Ш	Л	3
отку́да	Ш	Л	3	сча́стье	Ш	Л	3
бро́сить	Ш	Л	3	мне́ние	Ш	Л	3
вполне́	Ш	Л	3	спина́	Ш	Л	3
оста́льной	Ш	Л	3	фронт	Ш	Л	3
смочь	Ш	Л	3	центр	Ш	Л	3
немно́го	Ш	Л	3	а́втор	Ш	Л	3
самолёт	Ш	Л	3	ме́лкий	Ш	Л	3
статья́	Ш	Л	3	му́ж	Ш	Л	3
семь	Ш	Л	3	ста́вить	Ш	Л	3
всего́	Ш	Л	3	ле́то	Ш	Л	3
старáться	Ш	Л	3	ли́ния	Ш	Л	3
факт	Ш	Л	3	отно́ситься	Ш	Л	3
сле́дующий	Ш	Л	3	нести́	Ш	Л	3
чи́стый	Ш	Л	3	показа́ться	Ш	Л	3
те́мный	Ш	Л	3	руководи́тель	Ш	Л	3
зна́ние	Ш	Л	3	управле́ние	Ш	Л	3
специа́льный	Ш	Л	3	едва́	Ш	Л	3
впро́чем	Ш	Л	3	деревня́	Ш	Л	3
собы́тие	Ш	Л	3	больно́й	Ш	Л	3
полови́на	Ш	Л	3	село́	Ш	Л	3
то́нкий	Ш	Л	3	стра́шный	Ш	Л	3

любо́вь	Ш	Л	3	систе́ма		Л	3
те́ма	Ш	Л	3	тем		Л	3
объя́снить	Ш	Л	3	пробле́ма		Л	3
золо́той	Ш	Л	3	СССР	Ш	Л	
высту́пать	Ш	Л	3	до́лгий		Л	3
жела́ть	Ш	Л	3	брига́да	Ш		3
со́тня	Ш	Л	3	лу́чше	Ш		3
чужо́й	Ш	Л	3	бы́стро	Ш		3
во́ля	Ш	Л	3	поду́мать	Ш	Л	
меша́ть	Ш	Л	3	отря́д	Ш		3
сня́ть	Ш	Л	3	расска́зывать	Ш	Л	
образова́ние	Ш	Л	3	пе́сня	Ш		3
счастли́вый	Ш	Л	3	существова́ть		Л	3
морско́й	Ш	Л	3	ве́щество		Л	3
па́дать	Ш	Л	3	сою́з	Ш		3
купи́ть	Ш	Л	3	те́ло		Л	3
получа́ться	Ш	Л	3	проце́сс		Л	3
предложе́ние	Ш	Л	3	госпо́дин	Ш		3
те́плый	Ш	Л	3	уро́к	Ш	Л	
вы		Л	3	проси́ть	Ш		3
по		Л	3	подо́бный		Л	3
то		Л	3	осо́бенно	Ш		3
его́		Л	3	огро́мный		Л	3
ребя́та	Ш	Л		ско́ро	Ш		3
её		Л	3	коммунистиче́ский	Ш		3
их		Л	3	до́лго	Ш		3
молоде́жь	Ш		3	я́сный		Л	3
лета́	Ш		3	па́уза	Ш		3
бы́стрый		Л	3	студе́нт	Ш		3
ма́льчик	Ш		3	расте́ние		Л	3
мно́гий	Ш	Л		капита́н	Ш		3
осо́бненный	Ш	Л		собра́ние	Ш		3
амери́канский	Ш		3	эне́ргия		Л	3
ну́жно	Ш		3	па́па	Ш		3
не́который	Ш	Л		про́шлый	Ш	Л	

секретáрь	Ш		3	мировóй		Л	3
брат	Ш		3	цветóк	Ш		3
рáньше	Ш	Л		в́идно	Ш	Л	
т́ихо	Ш		3	звать	Ш		3
всё-таки		Л	3	довóльно		Л	3
зáвтра	Ш		3	молоко́	Ш	Л	
у́ровень		Л	3	мéнее		Л	3
состоя́ние		Л	3	поéхать	Ш		3
плохо́й	Ш	Л		промы́шленность		Л	3
плечó	Ш	Л		сади́ться	Ш		3
сесть	Ш		3	совреме́нный		Л	3
генера́л	Ш		3	ве́рно	Ш		3
т́рудно	Ш		3	сто́ль		Л	3
пре́жний	Ш	Л		служи́ть		Л	3
легко́	Ш		3	игра́	Ш	Л	
неда́вно	Ш		3	правите́льство	Ш		3
член	Ш		3	де́тский	Ш	Л	
мето́д		Л	3	прямо́й		Л	3
то́чно	Ш		3	кро́вь		Л	3
проце́нт		Л	3	наве́рное	Ш	Л	
обы́чно	Ш	Л		гекта́р	Ш		3
произойти́	Ш	Л		направле́ние		Л	3
ма́сса		Л	3	расска́з	Ш		3
бой	Ш		3	че́рт	Ш		3
учени́к	Ш	Л		то́чка		Л	3
кто́-то		Л	3	коро́ткий	Ш	Л	
петь	Ш		3	нос	Ш		3
политиче́ский		Л	3	пожа́луйста	Ш		3
крича́ть	Ш		3	значи́тельный		Л	3
луч		Л	3	коммуни́зм	Ш		3
действительно́	Ш		3	врач	Ш	Л	
ча́сто	Ш		3	ба́за		Л	3
обы́чный	Ш	Л		использова́ть		Л	3
па́рень	Ш		3	весёлый	Ш		3
экономиче́ский		Л	3	здрáвствовать	Ш		3

предложить	Ш	Л		дóктор	Ш		3
количество		Л	3	вроде		Л	3
побéда	Ш		3	улыбнётся	Ш		3
круг		Л	3	явлéние		Л	3
бабушка	Ш		3	надéжда		Л	3
вóсемь	Ш	Л		состоять		Л	3
национальный	Ш		3	плóхо	Ш		3
герóй	Ш		3	ясно	Ш		3
провести	Ш	Л		ум		Л	3
стóлько	Ш	Л		научиться	Ш	Л	
оснóва		Л	3	спокойно	Ш		3
богáтый	Ш		3	спасибо	Ш		3
бóдущее		Л	3	враг	Ш		3
повёрхность		Л	3	отдéльный		Л	3
худóжественный	Ш		3	вёрный	Ш	Л	
травá	Ш	Л		вóзле	Ш		3
значéние		Л	3	карман	Ш		3
возникáть		Л	3	ах	Ш		3
нрáвиться	Ш		3	достáточно		Л	3
шкóльный	Ш	Л		кáк-то		Л	3
позволить		Л	3	взглянуть	Ш		3
смея́ться	Ш		3	вóлос	Ш		3
борóться	Ш		3	вы́расти	Ш	Л	
дéятельность		Л	3	яркий	Ш	Л	
одна́жды	Ш	Л		идéя		Л	3
птíца	Ш	Л		рáдость	Ш	Л	
смерть		Л	3	вызвáть		Л	3
вовсé		Л	3	глубинá		Л	3
весьмá		Л	3	вчерá	Ш		3
пráвильно	Ш		3	пráвый	Ш		3
способный		Л	3	большинствó		Л	3
скóрость		Л	3	роднóй	Ш	Л	
случíться	Ш	Л		течéние		Л	3
родитель	Ш	Л		социáльный		Л	3
чай	Ш		3	наибóлее		Л	3

скорее	Ш	Л		передать	Ш		3
далёкий	Ш	Л		химический		Л	3
дружба	Ш		3	получиться	Ш	Л	
вновь	Ш	Л		технический		Л	3
создание		Л	3	согласиться	Ш	Л	
центральный	Ш		3	возвращаться	Ш		3
дождь	Ш	Л		весна	Ш		3
состав		Л	3	никак	Ш	Л	
способ		Л	3	министр		Л	3
литература		Л	3	синий	Ш		3
родина	Ш		3	тонна		Л	3
цена		Л	3	журнал	Ш	Л	
страница	Ш		3	служба		Л	3
бить	Ш		3	отдать	Ш		3
беседа	Ш		3	забота	Ш	Л	
занять		Л	3	перейти	Ш	Л	
пол	Ш		3	свобода		Л	3
корень		Л	3	трудо́вой	Ш	Л	
немец	Ш		3	металл	Ш	Л	
городской	Ш	Л		зрение		Л	3
сво́йство		Л	3	сожаление	Ш	Л	
поговорить	Ш		3	называться	Ш	Л	
население		Л	3	составлять		Л	3
ме́стный		Л	3	представитель		Л	3
учитель	Ш	Л		стих	Ш		3
магазин	Ш	Л		услышать	Ш	Л	
ме́дленно	Ш		3	како́й-нибу́дь		Л	3
цвет	Ш		3	ожидать	Ш	Л	
хватать		Л	3	прочий		Л	3
подниматься	Ш		3	партийный		Л	3
дед		Л	3	тихий	Ш	Л	
ку́хня	Ш		3	добиться	Ш		3
ла́дно	Ш		3	замеча́тельный	Ш		3
ми́мо	Ш		3	тётя	Ш		3
орга́н		Л	3	уча́стие	Ш	Л	

москóвский	Ш	Л		сквозь	Ш		3
зуб	Ш		3	вы́брать	Ш	Л	
зима́	Ш	Л		часы́	Ш		3
неужéли	Ш		3	стéпень		Л	3
песóк	Ш		3	поня́тно	Ш		3
исторíческий		Л	3	предмéт		Л	3
вон	Ш		3	слеза́	Ш		3
истóчник		Л	3	стремíться	Ш	Л	
выполн́ять	Ш		3	эх	Ш		3
му́зыка	Ш		3	вскóре	Ш	Л	
периóд		Л	3	заяв́ить	Ш		3
спокóйный	Ш	Л		страх		Л	3
секунда	Ш	Л		желéзный	Ш		3
потеря́ть		Л	3	кры́ша	Ш	Л	
луна́	Ш		3	перестáть	Ш		3
да́нный		Л	3	вспоминáть	Ш	Л	
ла́мпа	Ш		3	пуст́ить	Ш		3
нос́ить	Ш	Л		быв́ший	Ш	Л	
проду́кция		Л	3	хват́ить	Ш	Л	
дно		Л	3	сло́й		Л	3
стра́шно	Ш		3	ро́д		Л	3
теóрия		Л	3	голубóй	Ш		3
телефо́н	Ш		3	послáть	Ш		3
взрóслый	Ш	Л		почу́ствовать	Ш	Л	
подождáть	Ш		3	зато́	Ш	Л	
беда́	Ш	Л		по́льза	Ш	Л	
постро́ить		Л	3	говорíться	Ш	Л	
яв́иться	Ш		3	добáвить	Ш	Л	
ры́ба	Ш	Л		судíть		Л	3
совхóз		Л	3	гранíца		Л	3
улыба́ться	Ш		3	полéзный	Ш	Л	
высота́		Л	3	делáться	Ш	Л	
губá	Ш		3	привы́кнуть	Ш	Л	
мужч́ина	Ш	Л		находíть	Ш	Л	
пла́кать	Ш		3				

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