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Source: *The Slavic and East European Journal*, Vol. 33, No. 1 (Spring, 1989), pp. 20-30

Published by: [American Association of Teachers of Slavic and East European Languages](http://www.aatseel.org)

Stable URL: <http://www.jstor.org/stable/308381>

Accessed: 15/05/2011 20:49

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COMPUTERIZED PRESENTATION AND DRILL OF THE NOMINAL DECLENSIONS IN BEGINNING RUSSIAN LANGUAGE CLASSES

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A major impediment to the training of students to high levels of language proficiency in an academic environment is the amount of classroom contact which traditional curricular structures permit. College or university programs will typically allow three to five hours of classroom instruction each week for a beginning course. Achieving desirable levels of proficiency within such constraints is especially difficult when the target language is one of those, including Russian, which are more difficult for native speakers of English.

A number of factors are responsible for the special difficulty experienced by native speakers of English in learning Russian. Among these are the use of a non-Roman alphabet, phonetic peculiarities (such as palatalization of consonants), verbal aspect, and the paucity of words whose meaning can be guessed by comparison with English look- or sound-alikes. One of the main difficulties is the highly inflected nature of the Russian language: each noun possesses twelve forms, each adjective twenty-four, each verb about one hundred twenty-five. Thus, the correct usage of particular forms of particular words cannot be successfully drilled until the construction of the form involved has been presented and mastered. Put another way, training for proficiency in the use of a Russian word must often be preceded by training in the production of its various inflectional forms. This "pre-proficiency" training, as it might be called, is time consuming, and its successful issue brings, in and of itself, no usable increase in communicative competence.

There is, then, a dilemma in the teaching of Russian: "pre-proficiency" activities (such as vocabulary presentation and drill or the mastery of inflectional patterns) can be dealt with in class with a commensurate decrease in the time available for proficiency training proper, or the preliminary activities can be more or less neglected in class with a commensurate increase in class time available for proficiency training. In the latter case one must anticipate the attendant risks of, at worst, increased student attri-

tion or, at best, diminished productivity resulting from inadequate student preparation.

One would expect that teachers would typically deal with this dilemma through a compromise, the particular details of which would tend to vary in accordance with the realia of various instructional situations. At the same time, of course, instructors would long for a more perfect solution. They would want to be able to feel not only justified in removing drills in the production of inflected forms from the classroom, but would want some measure of hope that these tasks—which are no less crucial to students' success despite the fact that their performance is rather dull and mechanical—might be successfully completed by more than the most gifted members of the class. At the same time, instructors would like to be able to provide students in need of extra practice or remediation with a drill mechanism designed to promote mastery of the material and offer feedback for errors and suggestions for further study. If this were possible, instructors might very well feel a good measure of understandable relief that this interactive remediation was not destined to be realized during their office hours.

One of the foremost purposes in the development of computer-assisted instructional programs for use in the Russian-language program at the University of Minnesota has been to develop an interactive environment for the presentation and drill of such "pre-proficiency" tasks as mastering the inflectional systems of the various parts of speech. Our goal is to increase the amount of class time available for proficiency training by decreasing the amount apportioned to pre-proficiency language tasks without thereby incurring the counter-productive results anticipated above. At the same time, a facility for interactive remediation will also have been provided.

Under the title "Russian Conjugation and Declension" we have been developing a complex of five complementary programs which present, drill, and test the basic forms of assigned active vocabulary ("Vocabulary"), the declensional system ("Nouns," "Adjectives," "Pronouns"), and the conjugational system ("Verbs," including verbal adjectives and verbal adverbs). This article continues with a description of the pedagogical considerations involved in training students in the fluent manipulation of the inflected forms of nouns, and concludes with a description of the design and operation of the computer software which we have produced to answer these requirements.

With the exception of anomalous categories, such as indeclinables and pluralia/singularia tantum, each Russian noun has twelve forms, a singular and a plural for each of six cases: nominative, genitive, dative, accusative, instrumental, and prepositional. The pedagogical task is to assist students in achieving mastery of the selection and deployment of the particular form required by specific speech contexts. Proficiency in this skill is measured by the speed and accuracy with which the student is able to produce appropri-

ately constructed sentences containing the required nominal forms.

A variety of methods may be used to develop student facility with this task. Even the best of these methods will be unproductive, however, if students do not have command of the forms themselves. To some extent such command can be gained in the process of proficiency drill, but the productivity of such drill will naturally be greatly increased if students come to class with a good working knowledge of the processes involved in the construction of the various noun forms.

The production of noun forms involves (1) a fund of words with which to work, (2) a grasp of certain basic concepts and the ability to distinguish one type of noun from another, (3) a knowledge of the patterns according to which the various types of nouns change. It is obvious that memorization will play an important role in this process.

1. *Fund of lexical items.* Students must possess a fund of Russian nouns for practice. In a typical class, the nouns are given to students as items in a list provided in the textbook. In our case, the required active vocabulary is also entered into the program "Russian Conjugation and Declension: Vocabulary," which assists students to associate Russian words with their English equivalents. In the case of nouns, the "Vocabulary" program supplies students with the nominative singular as the "base form," that is, the form from which the stem of the noun can be most conveniently derived. If more than one form is required for correct derivation of the stem (e.g., *otéc* 'father') or if an irregular ending is involved in the declension (e.g., the nominative plural of *dom* 'house'), then an additional form, usually the nominative plural, is also supplied as a supplementary base form. The database of the vocabulary program is the source for the nouns included in the data-base of the nouns program. The latter program is designed so that students deal only with nouns which are required for the current lesson or were required with previous lessons. In addition, the program always supplies the dictionary form of the noun (the nominative singular) whenever it requests students to produce a form. The program may be configured so as to provide students with the nominative plural form as well as the nominative singular.

2. *Basic Concepts.* Students need to learn that the various forms of a noun are produced by adding different endings to the same stem. Further, they must know how to adjust the base form of a noun in order to obtain its stem, i.e., that portion of the noun which normally remains the same from form to form and to which the various endings are added. Finally, they must grasp that the choice of one form of a noun rather than another is dictated by the use of the noun within a sentence. In "Russian Conjugation and Declension: Nouns" these and other concepts are dealt with in a series of "Tutorials," which students may use before attempting the drill, and in a set of "Reference Materials," to which they may refer in the course of a drill.

Russian nouns occur in three genders—masculine, feminine, and neuter. Of these, the feminine gender exists in two varieties. Students must learn how to recognize the gender of a noun from its base form. This requirement is dealt with in the same manner as the items discussed just above.

3. *Knowledge of Patterns.* Finally, students must know the endings which are appropriate for a given case of noun of a given gender type. In a sense the main function of the program is to assist students in mastering the endings of the nouns. Information on endings is available case by case in the various lesson “Tutorials,” and in summary form in the “Reference Materials.” Discussion of the second genitive and special prepositional forms of certain nouns could be included if desired in the reference and tutorial materials; the program does not, however, include them in drills.

The presence of the components discussed above makes the nouns program a self-standing instructional device for the presentation of the basic uses of nouns and the manner of constructing their forms. The heart of the program, however, is its facility for drilling the material presented in the tutorials, that is, for affording students practice in the production of noun forms.

Since the nouns program is intended solely to assist students in mastering the pre-proficiency task of becoming familiar with the construction of the noun forms themselves, no facility has been provided to contextualize the information presented or the practice offered. The intent is to train students to perform, quickly and accurately, the steps needed in order to produce a given noun form: (a) to determine the gender type of the noun, (b) to derive its stem, and (c) to select and deploy the ending appropriate to the form required.

As explained earlier, steps (a) and (b) are of a largely conceptual nature and soon mastered through the use of tutorials. Step (c) is the point at which the majority of students encounter difficulties. The nouns program is designed in such a way as to be able to recognize more than sixty errors commonly made by students declining Russian nouns. Anticipated errors were chosen on the basis of the analysis of student errors on examination papers and on the basis of long experience in teaching the Russian language at the elementary level. So as not to burden readers with a perhaps meaningless catalogue of the particular errors allowed for, it will suffice to note that in general two categories of error are anticipated.

“General” errors are errors which are potential in all cases and numbers of the nominal declension. These include violations of the conventions of Russian spelling and failure to distinguish properly between hard and soft stem nouns. “Specific” errors include those which may occur only in particular cases and/or numbers of the nominal declension (e.g., the failure to distinguish between animate and inanimate nouns), or only in certain subgroups of nouns (e.g., failure to allow for the disappearance or insertion of

vowels in the stem of certain words; failure to allow for the unusual endings required by certain nouns in the prepositional singular), or only in certain exceptional words (e.g., failure to remember that the word for 'house' has an irregular nominative plural).

Thus, pedagogically speaking, the nouns program is intended to provide training in the mechanical task of producing the forms of nouns without the loss of valuable class time. This task is conceived of as involving the learning of a constructive process, rather than the rote memorization of large numbers of individual forms. This learning involves the presentation of certain conceptual information and the ability to return to these presentations when needed. Mastery is achieved through a drill and practice facility which is sensitive to a fairly large number of common student errors in the performance of the task and which provides appropriate feedback about these errors and, where appropriate, suggestions for further help accessible within the program itself. Finally, the program is designed to keep records of student achievement so that instructors can be familiar with student progress and be in a position to suggest remedial steps beyond those which the program itself is able to suggest.

The "Nouns" program provides three activities: tutorials, drills, and review drills. Students begin the program by entering the number of the chapter in the textbook on which they are working. Then a list of activities is presented for their choice. At the completion of each activity, students may choose another activity or quit the program. The flow is summarized in figure 1.

After selecting "Tutorial," students indicate a case and number (e.g., accusative plural). The appropriate tutorial then provides information on the use of the case, the generation of the forms, and any relevant exceptions. The format of the tutorial is entirely text-based, and generally consists of three to five screens. The instructor has entered the tutorials with a standard word processor.

After selecting "Drill," students again indicate a case and number. At this point, the program sets up an initial queue. This queue is not a queue of items, but rather of error types (a list of the most common errors recognized by the program is attached as an appendix). In this way, students see different items susceptible to a given error and learn to handle the problem situation rather than merely to recall a correct form. The instructor has indicated which errors are likely to occur with the chosen case and number, and each is entered into the initial queue twice.

The drill screen is depicted in figure 2. The number of items remaining in the drill is noted. Students are given the base form(s) of the noun and its English translation, and are prompted to enter the desired form (e.g., accusative plural). At this point, they may either enter the requested form or access one of several options.

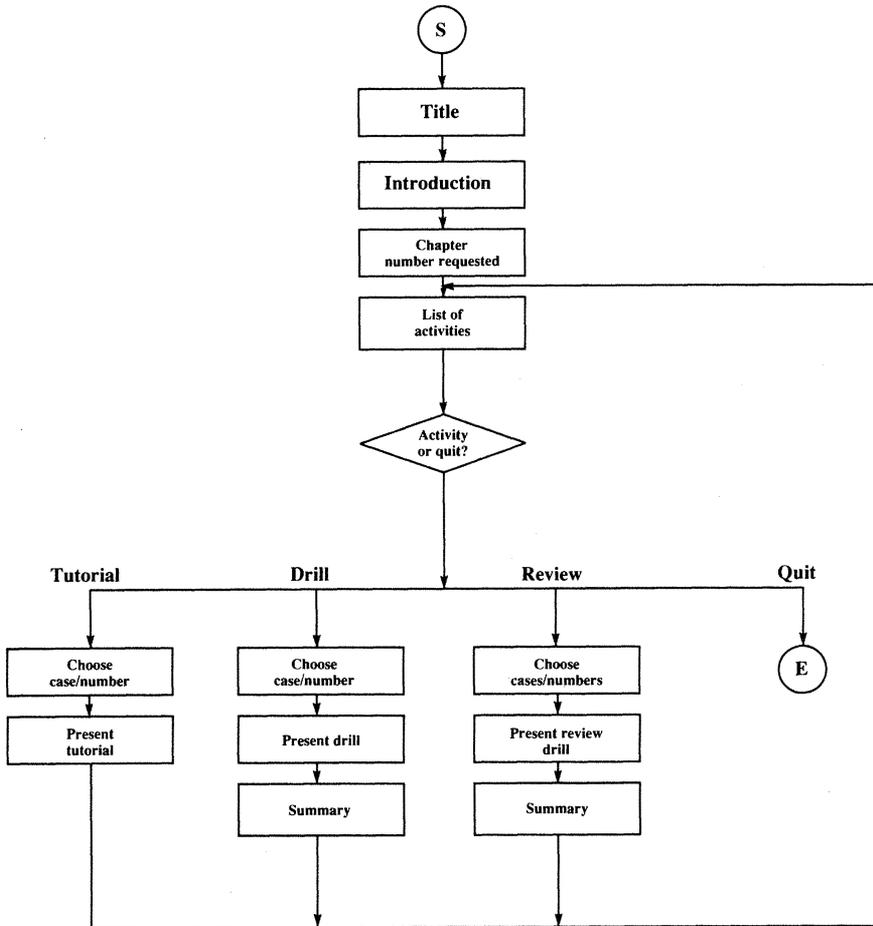


Figure 1. Flow of the "Nouns" Program

Help	Back	Reference	Answer	Keys											
<F8> for menu															
English: father			Items remaining: 10												
Nominative singular: отѣу			Nominative Plural: отѣуѣ												
Accusative Plural: __															
Type the requested form and press <Enter>.															
ë	1	2	3	4	5	6	7	8	9	0	-	Ъ	Э	←	
Tab	Я	Ш	Е	Р	Т	Ы	У	И	О	П	Ю	Щ			
Ctrl	А	С	Д	Ф	Г	Ч	Й	К	Л	Б	Ж	Enter			
Shift	З	Х	Ц	В	Б	Н	М	,	.	'	Shift				
Alt	Space Bar											Caps lock			

Figure 2. Drill Screen before Student Response

Student options are listed on the first line of the screen in a “menu bar.” Generally, the options include “Help,” “Back,” “Reference,” “Answer,” and “Keys.” If students need help to operate the drill, they choose “Help.” “Back” takes students out of the drill, after verifying that they want to exit. “Reference” displays a list of reference tutorials (e.g., spelling rules, endings). “Keys” provides a graphic of the keyboard with the cyrillic characters on the lower third of the screen. The keyboard will continue to be displayed until “Keys” is selected again. The “Answer” option is explained below.

An example of a drill item will illustrate the interactions. A drill on the accusative plural may present the following sequence of events.

1. The program selects an item which has as an anticipated error the type listed at the top of the queue.
2. The English translation and the nominative singular and plural (base) forms are provided.
3. The accusative plural is requested.
4. At this point, the student may choose one of the options described above, may choose “Answer,” or may enter a response and press <Enter> to have it judged.
 - a. If one of the options is selected, it is performed and, unless the student has backed out, the prompt for input is still active.

- b. If "Answer" is selected, the correct answer is provided, along with the feedback that there will be an opportunity to work with a similar noun later in the drill. For the purpose of maintaining the queue, this is treated as an incorrect answer .
 - c. If the student types a response and presses <Enter>, it is accepted.
5. Once a response is received, it is first checked to see if it is correct. If it is incorrect, it is analyzed to determine which, if any, anticipated errors were committed. Appropriate feedback is given, according to a scheme consistent with empirically-based guidelines (Carter).
 - a. If the response is correct, the student is given the feedback "Correct." In the queue, the top error type is deleted.
 - b. If the response is incorrect, the student is given either specific feedback (if an anticipated error is diagnosed) or the general feedback "Incorrect. The correct answer is. . ." (if no anticipated error can be found). Figure 3 illustrates a "fleeting vowel" error. The "fleeting vowel" error type is first deleted wherever it occurs in the queue, then re-inserted at points which the instructor has specified (e.g., at positions 3, 5, and 9). This is an adaptation of the "Variable Interval Performance Queuing" procedure (Alessi and Trollip, 142-45) and the procedures discussed by Merrill and Salisbury. Figure 4 lists the beginning queue and the queues that would result if the student answered correctly except for a "fleeting vowel" error.

Help	Back	Reference	Explain feedback
<F8> for menu			
English: father		Items remaining: 10	
Nominative singular: πατήρ		Nominative Plural: πατέρες	
Accusative Plural: πατέρας			
* This word has a "fleeting vowel" in its stem			
* The accusative case form of this noun is the same as its genitive case form.			
The correct answer is πατέρας			
Press <Enter> for the next item.			

Figure 3. Drill Screen after Response Is Judged

initial	correct response	incorrect response
1. Error A	1. Error B	1. Error B
2. Error B	2. Error C	2. Error C
3. Error C	3. Error D	3. Error A
4. Error D	4. Regular	4. Error D
5. Regular	5. Error A	5. Error A
6. Error A	6. Error B	6. Regular
7. Error B	7. Error C	7. Error B
8. Error C	8. Error D	8. Error C
9. Error D	9. Regular	9. Error A
10. Regular		10. Error D
		11. Regular

Figure 4: The Initial Queue, the Queue after a Correct Response, and the Queue after an Incorrect Response.

- At this point the following options are listed on the menu bar: "Help," "Back," "Reference," "Explain feedback." Students may choose one of them, or press <Enter> to receive another item. If "Explain feedback" is selected, a window on the screen provides additional information about the error and suggests tutorials (accessible via the "Reference" option) which pertain to the committed error.

In this way, mastery of the formation of the given case is assured, provided students complete the drill. The practice is designed so that students must demonstrate an ability to overcome all anticipated problems, are given feedback and remediation specific to the errors made, and are engaged most frequently with items subject to the mistakes they have tended to make. Thus, students receive individually tailored drills without tedious repetition of noun types which they have already mastered.

In addition to adapting to the needs of particular students, the program can also be configured to work as desired by particular instructors. Among the options available are the ability to specify textbook information and the opportunity to modify the way the drills function.

Information such as which lexical items appear in the textbook and the chapters in which they appear is entered via a *data-base editor*. This editor also allows instructors to flag items as susceptible to certain types of errors. Since the chapter number in which the nominative plural form of nouns is discussed (and hence, the chapter where it may be given as a base form) is likely to vary among texts, this information can be specified by using a *configuration editor*. The configuration editor also affords instructors the

opportunity to set the conditions for the drills. The availability of the "Answer" option can be turned on or off, and the number of times missed error types should be inserted into the queue and at which positions can be changed. An additional option allows instructors to turn off the mastery mode (in which case the variable interval performance queuing is disabled) and to decide how many times students should be allowed to "try again."

The design of the "Nouns" program reflects the objectives stated in the first part of this article. It provides efficient practice on the designated "pre-proficiency" tasks, adapting to individual students with specific feedback and choice of practice items. The tutorial and drill functions are integrated to provide students with the resources necessary to prepare for proficiency-oriented classroom activities. The program can be easily modified to work with different textbooks and to conform to the style of different instructors.

APPENDIX

The drill facility of the "Nouns" module of the program "Russian Conjugation and Declension" recognizes about sixty errors commonly made by students. The more common ones are listed below.

Error type	Incorrect Student Response	Error feedback message
Stress missing		Your response is spelled correctly, but the stress mark is missing.
Stress misplaced		Your response is spelled correctly, but the stress is misplaced.
Unanticipated ending error		That is the right noun, but you have used the wrong ending.
Unanticipated stem error		That is the correct ending, but the stem is misspelled.
Fleeting vowel error	Nom. pl. отéцы	This word has a fleeting vowel in its stem.
Treating feminine-2 noun as a soft-stem masculine noun	Gen. sg. двéря	This is a feminine-2 noun, not a masculine noun.
Treating feminine-2 noun as a soft feminine-1 noun	Inst. sg. двéрей	This noun is feminine-2, not feminine-1.
Spelling rule errors	Nom. pl. ошй́бки	You may not write -ы after к. [similar messages for each violation of spelling rules]
Improper handling of nouns which are morphologically feminine but refer to masculine persons.	Inst. sg. дéдушкой	Although this noun is masculine, its forms are those of a feminine-1 noun.
Treating a soft-stem noun as a hard stem noun	Nom. pl. портфéлы	This noun has a soft stem; its ending must show that the stem is soft.

Treating an animate noun as an inanimate noun	Acc. sg. профессо́р Acc. pl. де́вушки	The accusative case form of this noun is the same as the genitive case form.
Misplaced stress in plural of a 2-syllable neuter noun	Nom. pl. о́кна	The stress is on the other syllable.
Inserted vowel error	Gen. pl. де́вушк	A vowel is inserted into the stem of this noun in the genitive plural.
Prepositional case of nouns -ий, -ия, -ие	Prep. sg. лаборато́рие	Nouns ending in -ий, -ия, -ие in nom. sg. end in -и in the prep. singular.
Genitive plural of masculine nouns with stem ending in -ж, -ш, -щ, -ц	Gen. pl. карандашо́в	The ending is -ей.
Exceptional forms	Nom. pl. до́мы	This form is irregular.

Note: With an error message displayed on the screen, the student may request a fuller explanation of the error made by selecting the "Explain Feedback" option from the menu bar.

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