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Author
Tokbergen, Yerkezhan

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Second Language Vocabulary Acquisition through Storybook Reading

A Thesis submitted in partial satisfaction
of the requirements for the degree of

Master of Arts

in

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by

Yerkezhan Tokbergen

March 2020

Thesis Committee:
      Dr. Celeste Pilegard, Co-Chairperson
      Dr. Michael Solis, Co-Chairperson
      Dr. Soojin Park

The Thesis of Yerkezhan Tokbergen is approved:

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Committee Co-Chairperson

_____

Committee Co-Chairperson

University of California, Riverside

ABSTRACT OF THE THESIS

Second Language Vocabulary Acquisition through Storybook Reading

by

Yerkezhan Tokbergen

Master of Arts, Graduate Program in Education
University of California, Riverside, March 2020
Dr. Celeste Pilegard and Dr. Michael Solis, Co-Chairpersons

The aim of this study is to examine different methods (i.e., interactive and direct instruction) of teaching foreign vocabulary. In order to help instructional designers build more effective lessons, a quantitative experimental study with post-test only design on L2 vocabulary acquisition through storybook reading was conducted with 115 UCR college students. The participants were distributed into three different conditions: direct instruction (providing L1 translations of the new vocabulary), interactive instruction (providing additional tasks on the new vocabulary), and control (no instructions were provided). Results showed that the impact of direct and interactive instructions on college students was the same and not generalizable for all age group. Moreover, the findings indicate that prior familiarity with the story significantly affects vocabulary acquisition.

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Introduction

Knowing one or more foreign languages (FLs) is in demand all around the world. Learning FL not only opens opportunities in the financial and business world, but also boosts one's cognitive skills. For these reasons, researchers and instructors are in constant search for an effective method to teach FL. One requirement when learning a foreign language is a plethora of vocabulary words. Whereas children tend to acquire foreign language unintentionally, adults have to make more of an effort. Among other practices, vocabulary acquisition through storybook reading holds a special place in learning FL. Over the past two decades, researchers have drawn attention to effective vocabulary instruction techniques through reading stories (Laufer, 2009; Marulis & Newman, 2010; Nation, 1990). The findings provide evidence of beneficial instructions through reading on vocabulary acquisition. Most of these studies focus on young children's FL vocabulary acquisition through storybook reading (Collins, 2005; Jalongo & Sabolok, 2011; Chlapana & Tafa, 2014), whereas relatively less was done with adults. Thus, the current study aims to examine different methods of teaching foreign vocabulary, including interactive and direct instruction on young adults.

Literature review

Teaching Vocabulary

The National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network (2005) defines vocabulary as one of the important components of oral language skill along with grammar and semantics. Thus, vocabulary has been and remains a key aspect in first language (L1) acquisition (Mehta, 2009). Additionally, as a part of oral skill, vocabulary is a way of communication, so the importance of vocabulary mastery is undeniable. Acquiring L1 vocabulary is a natural process, yet quite challenging. In other words, young children learn primary language by communicating with caregivers and interacting with peers. On the contrary, teaching advanced L1 vocabulary is complex, including teaching the meaning of the word, its spoken and written forms, "word parts", grammatical behavior, collocations, and frequency (Richards, 1976; Nation, 2001), so vocabulary building may take decades. Children have limited vocabularies, but they gradually increase by school age and later by adolescence through reading (Nagy et. al., 1987). How do children increase their vocabulary? Some studies provide evidence that L1 young learners acquire new vocabulary intentionally and incidentally from storybook reading (Elley, 1989; Senechal et al., 1995). Young learners tend to acquire L1 vocabulary while listening, discussing, and reading a storybook. This effectively enhances children's vocabulary. Vocabulary can be acquired incidentally from reading depending on the frequency of the words in the text, the context, and similarity to the mother tongue (Saragi, Nation, & Meister, 1978). Moreover, L1 learners acquire new vocabulary both from storybook explicit

explanation and through incidental exposure (Collins, 2005). Students have approximately 60,000 words in their L1 vocabulary by the time they graduate from high school (Pence & Justice, 2008). According to Nippold (2007), young adults master their vocabulary in three ways: using direct instruction, contextual abstraction, and morphological analysis. Wang (2004) suggests that students should use not only direct instruction to enhance the vocabulary, but also contextual abstraction (i.e., using context clues to determine the meaning of unfamiliar words) and morphological analysis (i.e., analyzing the components of words to infer meaning). Therefore, adolescents and young adults can master vocabulary through reading: they are able to understand the meaning and usage of words through context and frequency. Accordingly, reading is an effective method for primary language vocabulary acquisition for different ages.

Teaching Vocabulary in Foreign Language

Vocabulary knowledge is vital element of both primary language and foreign language proficiency. To be fluent in a foreign language a learner should have a broad range of vocabulary. The more second language (L2) vocabulary one acquires, the easier they will communicate. However, acquiring L2 vocabulary might be complicated to the learners and a search for different techniques of word acquisition are justified. Studies suggest different techniques to acquire L2 vocabulary through reading. Namely, Hill & Laufer (2003) claim that form-oriented tasks (i.e., requiring a more precise meaning of the word) which stimulates learners to repeatedly refer to a dictionary is effective in vocabulary gain. Another study emphasizes that the effect of multimedia where picture and text are utilized has a positive impact on growth of L2 vocabulary (Chun & Plass,

1996). Acquiring synonyms for familiar words is effective in enhancing L2 vocabulary (Webb, 2007). A "pedagogically efficient" approach is a technique where vocabulary mastering and reading occur simultaneously (Huckin & Coady, 1999). According to Thornbury (2002) the above approach motivates learners and provides autonomy. In contrast, Coady (1997) has highlighted the beginner paradox when learners are not able to read because of a lack vocabulary and vise-versa. The study pointed out that L2 learners need to reach a certain threshold in vocabulary to read, and stressed special attention on teaching vocabulary.

In studies on vocabulary acquisition through reading great attention is paid to intentional and incidental vocabulary acquisition. Whereas the theory of intentional vocabulary acquisition states that 'focus on form' is more effective rather than incidental learning (de la Fuente, 2006; Laufer, 2005), other findings claim that L2 vocabulary growth occurs incidentally from reading depending on the word frequency in the text in a short duration (Grabe & Stoller, 1997; West, Stanovich, &Mitchel, 1993). Additionally, reading is a primary source of L2 incidental vocabulary acquisition (Ellis, Tanaka, & Yamazaki, 1994). In fact, L2 learners grasp an unfamiliar word meaning by lexical inference in reading (Bengeleil & Paribakht, 2004). Although a higher percentage of incidental vocabulary acquisition has been found (Horst, 2005), little evidence has been found on long-term retention of such vocabulary.

Similarly, a great amount of studies has been done on the direct and indirect instruction on vocabulary learning. Learners gain vocabulary by means of direct and explicit instruction during active participation in the learning process (Jalongo &

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Sobolak, 2011). Due to age, young learners have difficulties with implicit instruction. Therefore, vocabulary instruction should be clear, involving children in broad explanations and discussion of to-be-learned vocabulary.

Teaching Vocabulary through Storybook Reading

Most vocabulary acquisition through storybook reading studies use direct or interactive instruction techniques. Some findings on vocabulary acquisition through storybook reading showed that learners vocabulary acquisition directly relates to their initial vocabulary level (Collins, 2010; Coyne et al., 2007) and L2 oral language proficiency level (Lugo- Neris et al., 2010, Roberts & Neil, 2004).

Chlapana & Tafa's (2014) study on vocabulary acquisition through storybook reading investigated the effect of direct and interactive instruction on L2 learners in a group setting where L1 and L2 learners were studied together. Moreover, researchers tested long-term retention of L2 vocabulary. The findings showed that interactive instruction was superior to other two groups in vocabulary gain. This supports the theory of learners' active involvement in vocabulary acquisition (Coyne et all., 2007; Perkins, 2008; Roberts & Neal, 2004). Additionally, the direct instruction condition outperformed the control group. The results also indicated that learners with higher initial receptive vocabulary tended to show better results, which is consistent with previous studies (Collins, 2010; Coyne et al., 2007). Finally, the results of delayed post-test showed the effectiveness of intensive instruction in the interactive instruction

group. Therefore, actively involving learners in vocabulary explanation had an impact in long-term retention of the vocabulary.

Theoretical Framework and Rationales

Previous studies demonstrate that interactive instruction is a more effective than other techniques on L2 vocabulary gain. Most of the studies on vocabulary acquisition through storybook reading supports either interactive instruction (Chlapana & Tafa, 2014) or direct and extensive instruction. Furthermore, the studies on vocabulary acquisition through storybook reading focused on young children, while relatively less was done with adults. The present study is designed to examine different methods of teaching foreign vocabulary. These methods include interactive and direct instruction.

Teaching vocabulary is different across ages due to the different needs and cognitive skill of learners (Harmer, 2001). Instructors should consider age differences when teaching vocabulary. In order to see whether the effectiveness of interactive instruction is generalizable to young adults, the current experiment was run. The goal of the project is to help instructional designers build more effective lessons for adult learners.

The framework of the study was based on previous studies on effective instructional techniques in L2 vocabulary acquisition through reading a story book (Chlapana & Tafa, 2014; Coyne et all., 2007; Collins, 2005).

Based on above, the research questions of the current study are:

1) What is the impact of two different teaching methods (i.e. direct instruction and interactive instruction) on college students' FL vocabulary learning compared to control group?

2) What is the effect of interactive instruction compared to direct instruction on college students' FL vocabulary learning?

Method

Participants

Participants were 115 UC Riverside college students from the psychology subject pool who received course credit in exchange for the participation. According the eligibility requirements of the experiment, subjects were identified as non-Russian or Slavic Language group speakers. Consent for participation was obtained prior to taking part in the study. To prevent the identification of individual participants in the study, they were given a subject number during the experiment. The age range of participants was 18-31 years ($M = 19.71$, $SD = 1.9$), and there were 57 females and 58 males. However, during the experiment the gender was unbalanced within groups which did not affect the study results. Subjects were randomly assigned to three different treatment groups, where each group differed from others in instruction techniques: control group ($N = 37$, no instruction was provided), direct instruction group ($N = 39$, the translations of the new vocabulary was provided), and interactive instructional group ($N = 39$, additional tasks on new vocabulary were provided, as well as translations of the new vocabulary).

Materials

The study was adapted for college students from Chlapana and Tafa's research (2014). It aimed to examine the influence of direct and interactive instruction on college students in acquiring second language vocabulary. A between-subjects experimental design was utilized to identify the most effective teaching technique.

All the materials including the consent form (Appendix A) and experimental materials (story texts for each experimental group, questionnaire, and post-test) were computer based. The instruction was provided at the laboratory before the study was conducted. The story text was the same across all three groups with a total of 1102 words, including 53 Russian words and word combinations, 20 of which were targeted words. The targeted words were keywords (i.e., the words indicating the content of a story), whereas non-targeted words were non-essential ones. The control group had 9 slides of the "Krasnaya shapochka" story (Little Red Riding Hood fairy tale) in English with 53 words replaced with some Russian words, without providing any translations, information, or additional tasks. The control version of slides is demonstrated in Appendix B. The slides advanced after students press the "Next" button, and the participants were not allowed to go back to the previous slide. The reading part was untimed, so participants read the story at their own pace and it took approximately 10 minutes. The direct instruction group had the same version of the lesson as control group, except they were provided with the translation of each Russian word at the bottom of the slide, so they were able to know the meaning of the foreign words (see Appendix C). The version of the lesson for the interactive instructional group consisted of the translations of

the foreign words as well as an additional vocabulary task focused a subset targeted word following each slide. Participants were able to answer several times until they gave a correct response (see Appendix D). After the lesson all groups took the same post-test to identify how well they learned a new Russian vocabulary. The post-test was self-paced and consisted of 40 questions in total with 20 questions on targeted words and 20 on non-targeted words. The format of the post-test was random multiple-choice questions with 4 options and 1 correct response. Participants were given a Russian word or word combination and had to select the correct English translation among options or vice versa. The post-test samples are shown in Appendix E. The results were recorded automatically for further analysis.

All three groups received the identical questionnaire (see Appendix F). The questionnaire included information about demography of the participants: age, gender, program level, prior knowledge of Russian or any Slavic languages, and prior familiarity with the story. The participants were asked about prior knowledge of the story, the difficulty of the lesson, the amount of effort they put in, whether the method of teaching vocabulary was liked or not, the effectiveness of such kind of teaching method, and whether the lesson was fun as well. All above questions were presented as Likert scale survey. The prior knowledge question included "How well you were familiar with the plot prior to the lesson?". The familiarity levels indicated from 1-7 rating ("very familiar" to "very unfamiliar") (see Appendix F) for prior knowledge of the plot).

A paper-based debriefing form was provided at the end of the session.

The apparatus consisted of seven desktop computers, mice, and headphones to avoid any noise in the laboratory. The experimental run using the program MediaLab. All computers were located individually in cubicles.

Procedure

The researcher set up timeslots with 1 to 7 participants in each study session. Subjects were randomly assigned to a treatment condition and directed to the individual computer station. They were presented with the informed consent form preceding the experiment and asked to read it carefully. Participants were informed that they would be reading a story and answering vocabulary questions right afterward. They were asked to start the reading if they had no questions. The control group read the story with no translation, while the direct treatment group received the translations of the Russian vocabulary. The interactive instruction group received additional tasks for the targeted Russian words and translations of the words as well. After the lesson participants were given the post-test to demonstrate how well they learned new foreign vocabulary. Participant were also asked to fill out demographic questionnaire after they completed post-test. The results were recorded automatically in the MediaLab program. The entire process took about 35 minutes depending on a treatment condition.

Each participant was given a paper-based debriefing form at the end of the experiment.

Results

The data was examined in SPSS using analysis of variance (ANOVA) and analysis of covariance (ANCOVA).

Was the study demographically balanced across the treatment groups? To identify whether the groups differed from each other on basic demographic characteristics the analysis of variance (ANOVA) was utilized. ANOVA with α = .05 level showed that there were no significant differences across the groups in age, $F(2, 112) = .20$, $p = .82$ (see Table 1 for descriptive statistics).

However, significant differences were found in prior familiarity with story, $F(2, 112) = 4.39$, $p = .015$ (see Table 1).

Table 1

Descriptive statistics for Age, Prior Familiarity with the Story, and Post-test score across the three groups' (N=115).

	n	M	SD
Age			
Control	37	19.86	2.44
Direct	39	19.59	1.65
Interactive	39	19.59	1.56
Total	115	19.71	1.90
Prior familiarity with the story			
Control	37	5.08	1.38
Direct	39	5.46	1.21
Interactive	39	5.90	0.99
Total	115	5.49	1.24
Post-test scores			
Control	37	18.70	5.89
Direct	39	27.82	7.16
Interactive	39	28.82	7.29
Total	115	25.23	8.14

In addition, a chi square analysis showed significant differences across the three groups on proportion of males and females, $\chi^2(2, N = 115) = 8.69$, $p = .013$ (Table 2 represents the ratio of females and males across the three groups).

Table 2

The ratio of females and males across the three groups (N=115).

	Control group		Direct instruction		Interactive	instruction
	f	*%*	*f*	*%*	*f*	*%*
Female	18	31.6	13	22.8	26	45.6
Male	19	32.8	26	44.8	13	22.4

Therefore, according to the basic characteristics the groups were equivalent in age, whereas they were nonequivalent in prior familiarity with the story and were gender unbalanced across the treatment groups.

Which teaching techniques was the most effective in L2 vocabulary acquisition? Since previous results showed that the groups were not equivalent in gender and prior familiarity with the story, one-way analysis of covariance (ANCOVA) with both prior knowledge of the story text and gender were used as covariates on subsequent analyses. A significant effect of treatment groups was found on the post-test, $F(2, 110) = 20.85$, $p < .001$, $\eta_p^2 = .28$ after controlling for prior knowledge and gender. The covariate, prior knowledge, was significantly related to the post-test score, $F(1, 110) = 7.63$, $p = .007$, $\eta_p^2 = .07$, whereas, gender was not $F(1, 110) = 1.20$, $p = .28$.

Additionally, the assumption of homogeneity of variances was tested and satisfied based on Levene's F-test, $F(2, 112) = 1.61$, $p = .21$. Post-hoc comparisons using

Bonferroni test indicated that there were significant differences between control and direct instruction groups ($p < .05$) and control and interactive instruction groups ($p < .05$). Moreover, a Pearson product-moment correlation coefficient was computed to assess the relationship between the prior knowledge of the story and total post-test scores. The prior knowledge of the story and total post-test scores were found to be moderately positively correlated, $r = .347, p < .001$ (Cohen, 1992). Therefore, after removing all non-significant main effects the results showed that there were significant differences between control and direct treatment groups, as well as control and interactive ones. However, the estimated marginal means comparison showed that there were no significant differences between direct ($M = 28.09$) and interactive instructional groups ($M = 27.99$) (see Table 3 for estimated marginal means comparison).

Table 3

Estimated marginal means of the three groups.

	M	SE
Contrast	19.30	1.11
Direct	28.09	1.08
Interactive	27.99	1.10

According to the parameter estimates direct and interactive treatment groups significantly outperformed control group; however, there were no significant differences in the post-test scores between experimental groups. The above information is presented as parameter estimates in Table 4.

Table 4

Parameter estimates for analysis of covariance model for total Post-Test Score

Parameters	B	SE	t	p
Intercept	20.781	3.336	6.229	.000
Control	0			
Direct	8.785	1.564	5.551	.000
Interactive	8.686	1.583	5.487	.000
Prior knowledge	1.443	.523	2.761	.007
Gender	-1.411	1.290	-1.094	.276
R^2=.37 (adjusted R^2=.34)				

How well did learners acquire targeted words? A one-way ANCOVA was conducted to compare the effectiveness of treatments in acquiring L2 targeted words (TW) while controlling for gender and prior familiarity with the text. The results showed there was a significant differences of groups on targeted words after controlling prior knowledge and gender, $F(2, 110) = 16.87$, $p < .001$, $\eta_p^2 = .24$. The covariate, prior knowledge, was significantly related to the post-test score, $F(1, 110) = 10.04$, $p = .002$, $\eta_p^2 = .08$. However, the covariate, gender was not significantly related to the post-test, $F(1, 110) = .72$, $p = .39$ (see Table 5 for descriptive statistics).

Table 5

Descriptive statistics for Targeted Words and Non-Targeted Words across the three groups

	n	M	SD
Targeted words			
Control	37	10.43	3.97
Direct	39	14.79	3.83
Interactive	39	15.82	3.55
Total	115	13.74	4.42
Non-Targeted Words			
Control	37	8.27	2.70
Direct	39	13.03	3.67
Interactive	39	13.00	4.24
Total	115	11.49	4.21

Furthermore, Levene's test was carried out and the assumption fulfilled. No significant differences between direct ($M = 14.92$) and interactive treatment groups ($M = 15.34$) were found comparing the estimated marginal means. In addition, Bonferroni post-hoc tests showed significant differences between control and direct instruction groups ($p < .05$) and control and interactive instruction groups ($p < .05$). The parameter estimates indicated that direct and interactive treatment groups significantly outperformed control group (see Table 6).

Table 6

Parameter estimates for analysis of covariance model for Targeted Words

Parameters	B	SE	t	p
Intercept	6.111	1.661	3.679	.000
Control	0			
Direct	4.108	.850	4.835	.000
Interactive	4.535	.871	5.205	.000
Prior knowledge	.912	.288	3.169	.002
Gender	-.605	.710	-.851	.397
$R^2=.35$ (adjusted $R^2=.32$)				

How well did learners perform in acquiring non-targeted words? Along with targeted words it was also analyzed how well non-targeted words were acquired by participants. To determine which group outperformed the others in acquiring L2 non-targeted words (NTW) ANCOVA was utilized as in two previous cases. The results showed there were significant differences of groups on non-targeted words scores, $F(2, 110) = 18.64, p < .001, \eta_p^2 = .25$ after controlling for both the prior knowledge and gender; none of the covariates was a significantly relates to the gain NTW (see Table 5 for descriptives). Significant differences were found between control ($M = 8.49$) and direct treatment ($M = 13.17$) groups, and control and interactive ($M = 12.16$) groups. Therefore, both direct and interactive instructional groups outperformed the control group (see Table 7).

Table 7

Parameter estimates for analysis of covariance model for Non- Targeted Words

Parameters	B	SE	t	p
Intercept	5.984	1.625	3.682	.000
Control	0			
Direct	4.677	.831	5.625	.000
Interactive	4.151	.853	4.868	.000
Prior knowledge	.531	.281	1.888	.062
Gender	-.807	.695	-1.161	.248
$R^2=.31$ (adjusted $R^2=.29$)				

Discussion

The present study sought to examine whether interactive instruction is effective for college students in L2 vocabulary acquisition through reading storybook. It the light

of previous findings, it was expected that direct instruction on L2 vocabulary acquisition would be less effective than interactive instruction (Chlapana & Tafa, 2014). However, the current findings showed direct instruction was as effective as interactive instruction in vocabulary gain. In other words, both direct instruction and interactive instruction have positive effect on young adults' L2 vocabulary acquisition. The findings of the present study provide only partial support of the effectiveness of interactive instruction (Chlapana & Tafa, 2014).

The results also indicated that two instruction groups outperformed participants of control group, which confirm the efficacy of the treatment. Even though the control group showed lower results in comparison with treatment groups, they acquired new vocabulary as well (Chlapana & Tafa, 2014; Hunt & Beglar, 2005). Furthermore, the results showed moderate correlation between prior familiarity with the story and total post-test score. Thus, the more the story was familiar, the higher were scores.

The same patterns were found for Target Word (TW) acquisition across three groups. Although the interactive instruction slightly outperformed direct instruction, the difference was not significant.

Finally, the impact was greater for instructed words than for uninstructed ones. The results on acquiring Non-Targeted Words (NTW) were the lowest. However, learners from instruction groups gained some NTW. The reason is incidental vocabulary acquisition because of the frequency of the words in the text (Saragi, Nation, & Meister, 1978), and prior familiarity with the story.

Limitations and future directions.

As with the majority of studies, the design of the current study is subject to limitations. One of the primary limitations of the study was the duration. There was only one lab session where participants received a lesson (i.e., instruction and post-test). Therefore, the short-term lab study might have affected the overall results, and the results might be different in the classroom settings. Future studies need to be done in classroom settings with long-term practices on vocabulary acquisition through storybook reading. As mentioned above, the lesson was conducted in a lab setting; thus, participants may not have been motivated to learn L2 vocabulary. Future studies should replicate the research in actual class settings, where the motivation of the students will be different.

The participation requirement in the study was not to speak Russian or any Slavic languages; thus, a pre-test was not conducted. In order to generate more accurate outcomes, pre-test and/or delayed post-treatment tests for long-term retention rates might be necessary. One important issue that could not be addressed in the present study because of the post-test format (i.e., multiple choice) is the inability to gauge the actual usage of vocabulary in conversation. Participants might have recognized the word during the post-test, but could not use it on a daily basis.

Another limitation is that the results could be different if the chosen story was more complex. The story of Little Red Riding Hood was chosen on purpose. The story is well known, easy for perception, and has been adapted in many languages. Future studies

should thoroughly consider materials and may choose a more relevant, age-appropriate, and interesting one for college students.

Based on the findings, the effectiveness of direct instruction along with interactive instruction is promising for young adults. However, since this study measured only the short-term word retention and focused on a comparison of direct and interactive instructions, the results may not be generalizable to other real-world vocabulary acquisition methods.

Conclusion

Interactive instruction is effective on vocabulary acquisition through storybook reading and leads to substantial vocabulary gain (Chlapana & Tafa, 2014); however, his method may not be as appropriate for young adults. It seems that both direct and interactive instruction are beneficial in FL vocabulary acquisition through storybook reading for college students compare to control group. The impact of the interactive instruction is huge, yet not generalizable for all age groups. Moreover, the findings indicate that prior familiarity of the story significantly affects the vocabulary acquisition.

Overall, the findings of the current study suggest that appropriate techniques should be given to young adults on L2 vocabulary acquisition. The age difference and level of processing of the materials should be taken into account. The following methods applicable for all languages.

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APPENDICES

Appendix A: Consent Form

The next page will be informed consent information about the experiment.

Please DO NOT click 'Continue' on the next page until you are completely done reading the informed consent information. You will not be able to go back.

You can use the scroll bar on the right to scroll down the page.

Continue ▶

Informed Consent
Please DO NOT click 'Continue' on the next page until you are completely done reading.
You will not be able to go back.

Procedure. You are about to participate in a research study in which you will read a folktale that includes foreign vocabulary words. Before the lesson, you will complete a short vocabulary test. When the lesson is finished, we will have some questions for you to answer. The experiment will take no more than 60 minutes.

Purpose. This study is designed to investigate different methods of teaching foreign vocabulary with stories. These methods include interactivity and direct instruction. The goal of this project is to help instructional designers build more effective lessons.

Exclusion criteria. You must be a current UC Riverside student, at least 18 years old, and an English speaker to participate. Participants must not speak Russian or any other Slavic language or have taken any classes in Russian or any other Slavic language.

Compensation. For each hour you participate you will receive 1 research credit in compensation for your participation. If you withdraw early you will receive partial compensation at a rate of .5 credits for each partial half hour participated.

Risks. The risk of identifiable data will be managed by never linking data to participants' names. The risk of data security will be managed by storing data in a locked room on password-protected computers that only the experiments have access to. The risk of coercion is managed with moderate participate compensation. The risk of boredom or frustration with the learning materials is managed by assuring participants that their responses are for research purposes only.

Benefits. The participant will be exposed to research in cognitive educational psychology and may learn foreign language vocabulary words.

Confidentiality. Data collected during this experiment will be stored in a secure room, accessible only by the researchers. Research data will never be linked to your name. De-identified data may be used in scientific publications. Data will be stored for a minimum of five years.

Voluntary participation. Your participation in this study is completely voluntary, and you may withdraw from the experiment at any time, with no penalty. If you choose to withdraw from the study, you will receive credit based on the time spent participating (see section: Compensation). Please inform the experimenter during the study if you wish to withdraw. Your data cannot be withdrawn from the study as it is not linked to identifying

Continue ▶

Appendix B: Samples of control group's story text

Krasnaya shapochka

Once upon a time there was a dear **MALEN'KAYA DEVOCHKA** who was loved by everyone who looked at her, but most of all by her **BABUSHKA** , and there was **NICHEGO** that she would not have given to the **REBYENOK**. Once she gave her a little **KRASNAYA SHAPOCHKA**, which suited her so well that she would never wear anything else; so she was always called "**KRASNAYA SHAPOCHKA**".

One day her **MAT'** said to her: 'Come, **KRASNAYA SHAPOCHKA**, here is **KUSOK PIROGa** and **BUTYLKA MOLOKA**; take them to your **BABUSHKA**, she is **BOL'NA** and **SLABA**, and they will do her good. Set out before it may fall and break the **BUTYLKA** , and then your **BABUSHKA** will get **NICHEGO**; and when you go into her **KOMNATA** , don't forget to say, "**DOBROE UTRO**", and don't peep into every corner before you do it.'

'**YA** will take great care,' said **KRASNAYA SHAPOCHKA** to her **MAT'**, and gave her hand on it.

The **BABUSHKA** lived out in the **LES**, half a league from the **DEREVNYA**, and just as **KRASNAYA SHAPOCHKA** entered the **LES, VOLK** met her. **KRASNAYA SHAPOCHKA** did not know what a wicked **SUSHCHESTVO** he was, and was not at all afraid of him.

"**DOBRYI DEN'**, **KRASNAYA SHAPOCHKA**," said he.

'Thank you kindly, **VOLK**.'

'Whither away so early, **KRASNAYA SHAPOCHKA?**'

'To my **BABUSHKA**.'

'What have you got in your **PEREDNIK?**'

'**PIROG** and **MOLOKO**; yesterday was baking-day, so poor sick **BABUSHKA** is to have something good, to make her stronger.'

'Where does your **BABUSHKA** live, **KRASNAYA SHAPOCHKA?**'

'A good quarter of a league farther on in the **LES**; her **DOM** stands under the three large oak-trees, the nut-trees are just below; you surely must know it,' replied **KRASNAYA SHAPOCHKA.**

Appendix C: Samples of direct instruction group's story text

Krasnaya shapochka

Once upon a time there was a dear **MALEN'KAYA DEVOCHKA** who was loved by everyone who looked at her, but most of all by her **BABUSHKA** , and there was **NICHEGO** that she would not have given to the **REBYENOK**. Once she gave her a little **KRASNAYA SHAPOCHKA**, which suited her so well that she would never wear anything else; so she was always called "**KRASNAYA SHAPOCHKA**".

KRASNAYA SHAPOCHKA – Little Red riding hood
MALEN'KAYA DEVOCHKA – a little girl
BABUSHKA – a grandmother, granny
NICHEGO – nothing
REBYENOK- a child

One day her **MAT'** said to her: 'Come, **KRASNAYA SHAPOCHKA**, here is **KUSOK PIROGa** and **BUTYLKA MOLOKA**; take them to your **BABUSHKA**, she is **BOL'NA** and **SLABA**, and they will do her good. Set out before it gets hot, and when you are going, walk nicely and quietly and do not run off the **TROPINKA**, or you may fall and break the **BUTYLKA** , and then your **BABUSHKA** will get **NICHEGO**; and when you go into her **KOMNATA** , don't forget to say, "**DOBROE UTRO**", and don't peep into every corner before you do it.'

'**YA** will take great care,' said **KRASNAYA SHAPOCHKA** to her **MAT'**, and gave her hand on it.

BUTYLKA MOLOKA - a bottle of milk
KUSOK PIROGa - a piece of pie
BOL'NA I SLABA – ill and weak
TROPINKA - path
KOMNATA - room
"DOBROE UTRO!" – 'Good morning!'
MAT' – mother
YA – I

Appendix D: Samples of interactional instruction group's story with additional task

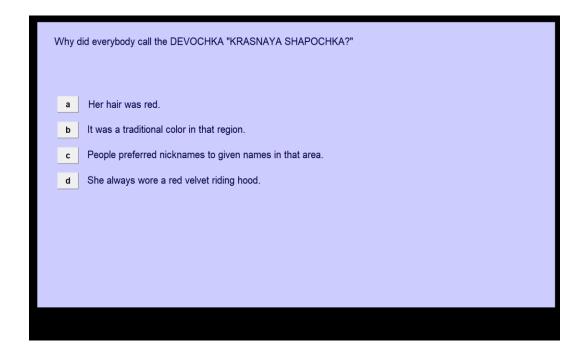Thank you for participating in our experiment!

You will be reading a text.
Descriptions of new words are provided for you at the bottom of each page.

During the reading you will be asked to answer some questions based on the information presented in the text.

Continue ▶

Krasnaya shapochka

Once upon a time there was a dear **MALEN'KAYA DEVOCHKA** who was loved by everyone who looked at her, but most of all by her **BABUSHKA** , and there was **NICHEGO** that she would not have given to the **REBYENOK**. Once she gave her a little **KRASNAYA SHAPOCHKA**, which suited her so well that she would never wear anything else; so she was always called "**KRASNAYA SHAPOCHKA**".

KRASNAYA SHAPOCHKA – Little Red riding hood
MALEN'KAYA DEVOCHKA – a little girl
BABUSHKA – a grandmother, granny
NICHEGO – nothing
REBYENOK- a child

Why did everybody call the DEVOCHKA "KRASNAYA SHAPOCHKA?"

a	Her hair was red.
b	It was a traditional color in that region.
c	People preferred nicknames to given names in that area.
d	She always wore a red velvet riding hood.

How was KRASNAYA SHAPOCHKA supposed to get to her BABUSHKA?

☐ She had to follow the TROPINKA

☐ She needed take a bus

☐ She had to run off the TROPINKA

☐ She had to find someone who could take he   BUSHKA's DOM
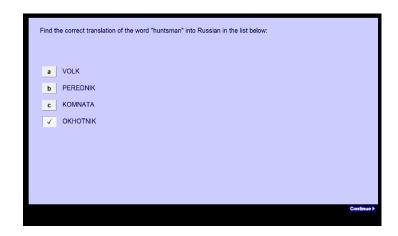
Instruction Note

ⓘ Please try again.

OK

Correct!

Once Babushka gave her **a red velvet riding hood (krasnaya shapochka),** so KRASNAYA SHAPOCHKA never wore anything else.

Appendix E: Samples of post-test

Now prepare to answer the questions.

Continue ▶

Find the correct translation of the word "huntsman" into Russian in the list below:

a   VOLK

b   PEREDNIK

c   KOMNATA

✓   OKHOTNIK

Continue ▶

How would you translate the Russian phrase KUSOK PIROGa into English?

a   piece of meat

b   peace and quiet

c   piece of pie

d   whole cake

Continue ▶

Appendix F: Samples of demographic question

Please enter you major in the box below.
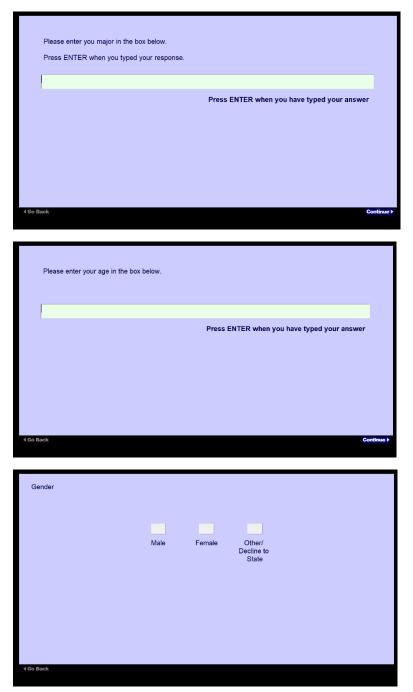
Press ENTER when you typed your response.

Press ENTER when you have typed your answer

◀ Go Back   Continue ▶

Please enter your age in the box below.

Press ENTER when you have typed your answer

◀ Go Back   Continue ▶

Gender

Male   Female   Other/
                              Decline to
                              State

◀ Go Back

Please enter you major in the box below.

Press ENTER when you typed your response.

Jen

Press ENTER when you have typed your answer

◄ Go Back   Continue ►

Class

☐ Freshman

☐ Sophomore

☐ Junior

☐ Senior

☐ Other

◄ Go Back

Did you have any familiarity with Russian or any other Slavic languages before participating in this experiment? If yes, you will be able to describe your experience on the next slide.

Slavic languages include Russian, Belarusian, Ukrainian, Polish, Czech, Slovak, Slovene, Serbo-Croatian, Macedonian, and Bulgarian.

☐ Yes

☐ No

◄ Go Back

Please rate how familiar you were with the Little Red Riding Hood story prior to this experiment?

- o Very familiar

- o Familiar

- o Somewhat familiar

- o Neither familiar nor unfamiliar

- o Somewhat unfamiliar

- o Unfamiliar

- o Very unfamiliar

How much effort did you put into this task?

- o Extremely high

- o High

- o Somewhat high

- o Average

- o Somewhat low

- o Low

- o Extremely low

Please rate your statement: "I would like to learn a foreign language in this way."

- o   Strongly agree

- o   Agree

- o   Somewhat agree

- o   Neither agree nor disagree

- o   Somewhat disagree

- o   Disagree

- o   Strongly disagree

Please rate your agreement: "I think the lesson was fun."

- o   Strongly agree

- o   Agree

- o   Somewhat agree

- o   Neither agree nor disagree

- o   Somewhat disagree

- o   Disagree

- o   Strongly disagree