

Conclusion

- Based on corpus and NLP tools, Revita can utilize these resources for personalized learning.
- Next steps:
 - create a dialogue through the system relating stories, interaction between a teacher and student,
 - assessment of a story's readability on a learner's level,
 - deeper assessment of comprehension and progress towards the personalization.

Revita info and contact information
<https://revita.cs.helsinki.fi>

The main goal: **System should comprehend a student's level**

A good teacher knows:

- the subject matter — **topic-relevant**
- what the student knows — **diagnostic**
- what the student's interests are — **tailored** (adapts variety of content)
- what the student has prepared to learn next — **intentional**
- where the student may be stuck — **break barriers, adapt learning**
- if content can be taught in a different way — **flexible** (learns, adapts, practices)

Reinforcement: "Data as personal evaluation" (Torgiano 2014)

Adjusting to the student's level

Revita adapts content based on individual student progress for all exercises.

- For a given topic, it **sets difficulty** to correct weights for repetitive materials
- exercises always show correctly solved before
- repeat the same about correctly solved before
- **gradability**
- **exercise importance** (more correctly and successfully)
- **exercise frequency** (higher probability)
- **exercise duration** (shorter)
- **Exercise complexity** (less the number of background words)
- **Takes into account personality and conditions** within the exercise.

Progress test:

• **Test Russian proficiency on various topics**

• **Challenge yourself with "long sentences" (B2-C1 level)**

• **Test for understanding** how many questions from each category

• **Personalized progress test for Russian**

• **Personalized assessment** (<https://progress-test.ru/>) in Helsinki and in other European and English-speaking cities for more than 10 years.

Topics categories:

- News & Events
- Education
- Science
- History
- Culture & Arts
- Travel
- Food & Drink
- Business
- Technology

Target genres:

- Articles
- Books
- Cartoons
- Diaries
- Letters
- Press releases
- Speeches
- Textbooks
- Travel guides

revita.cs.helsinki.fi

Revita
• Academy of Finland project at the University of Helsinki, Kazakhstan
• tools for supporting language learning
• users for supporting language learning

• Finnish, Swedish, German, Swedish, Spanish, Italian, French, Kazakh, North Soami, Komi, Zyrian, Udmurt, Tatar, Nenets, Mari, Sakha, Yakut, Nenets

• Scalable: more languages to add

Corpus-based exercises

- Exercises simulate **active language production** — rather than passive absorption of material
- **Lesson uploads articles interesting to learner** — to motivate practice time
- **generation exercises authentically** — level of exercises based on learner's answers given so far
- **Skills: grammar and vocabulary (listening and speaking) — in progress**
- Practice includes: **Mini-chats, e-mails, texts, ads, comments, competition and puzzles etc.**

Conclusion

- Based on corpus and TSP books, Revita can assist these students in personal learning.
- This system:
 - enables collaboration through the stories, sharing, reuse, interaction between teacher and students
 - assessment of a story's readability at a learner's level
 - deeper assessment of competence and progress essential for personalization

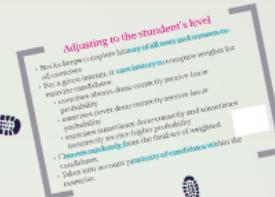
Revita is free and innovative Open Source
<https://revita.cs.helsinki.fi>



The course goal: *Apprenticeship preparation & readability to guide teacher*

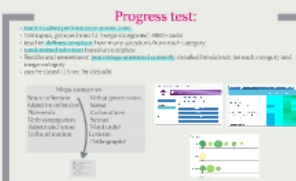
A good teacher knows: *Input-relevant, context-oriented*
• What the learner knows: *Does not know* — *learners' resources*
• Ability to learn: *Learn* — *learn any context for learning: resources*
• Must not be confused with *output-relevant* — *process-oriented variety of learner story*
• What the learner is best prepared to learn: *Input-relevant*
• If a learner has some knowledge — *learn faster, open learning*
• If a learner has no knowledge — *learn faster, open learning*
• If a learner has no knowledge — *learn faster, open learning*
• If a learner has no knowledge — *learn faster, open learning*

Personalization: "A story of personal development" (Kopotev 2014)



Adjusting to the student's level

- Revita keeps a complete history of all items and processes for all courses
- For a given learner, it uses history to compute weights for various readability
- weights above some threshold become less readability
- weights below some threshold become less readability
- weights above some threshold become less readability
- weights below some threshold become less readability
- weights above some threshold become less readability
- weights below some threshold become less readability



Progress test:

• *Track reading performance system: data*

• *Learning progress track in 'beginning level' - 4000+ words*

• *What are the main categories? have many groups in each category*

• *Readability assessment: **personalization** & **readability** (readability based on each category and engagement)*

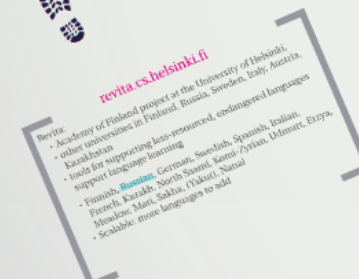
• *Can be used to track the results*

Group category	Level of generalization	Score	Readability
News or features	High	3.5	0.85
Adapted or reformulated	Medium	2.5	0.75
News	Low	1.5	0.65
Texts or dialogues	High	3.5	0.85
Texts or dialogues	Medium	2.5	0.75
Texts or dialogues	Low	1.5	0.65
Texts or dialogues	High	3.5	0.85
Texts or dialogues	Medium	2.5	0.75
Texts or dialogues	Low	1.5	0.65



• *Readability assessment: **personalization** & **readability** (readability based on each category and engagement)*

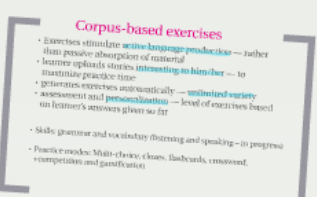
• *Can be used to track the results*



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Revita:

- Academy of Finland project at the University of Helsinki
- other universities in Finland, Russia, Sweden, Italy, Austria, Kazakhstan
- tools for supporting less-resourced, endangered languages
- tools for supporting language learning
- support languages learning
- Finnish, Russian, German, Swedish, Spanish, Italian, Persian, Kazakh, North Somali, Kazakh Zhyban, Uzbek, Tajik, Sakha (Yakut), Navar
- Scalable: more languages to add



Corpus-based exercises

- Exercises stimulate *active language production* — rather than *passive absorption* of material
- learner uploads stories *interesting to him/her* — to maximize practice time
- generates exercises *authentically* — *unlimited variety*
- assessment and *personalization* — level of exercises based on learner's answers given so far

- Skills: grammar and vocabulary (listening and speaking — in progress)
- Practice modes: Multi-choice, cloze, flashcards, crossword, competitions and gamification

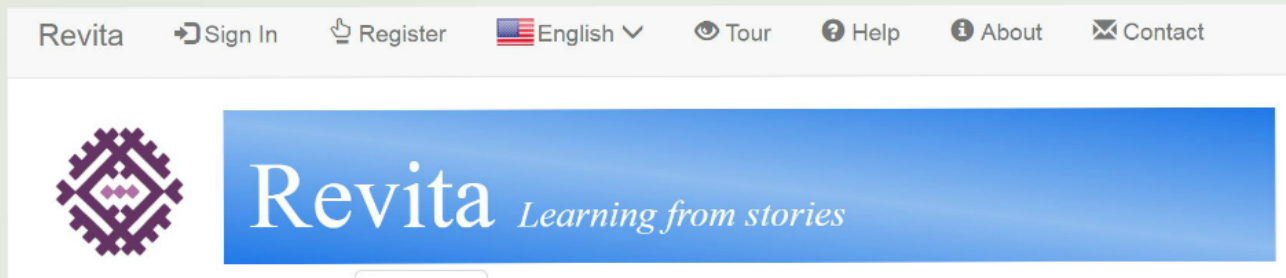
Mikhail Kopotev (mihail.kopotev@helsinki.fi)

REVITA: A progress test and corpus driven exercises for Russian

revita.cs.helsinki.fi

Revita:

- Academy of Finland project at the University of Helsinki,
- other universities in Finland, Russia, Sweden, Italy, Austria, Kazakhstan
- tools for supporting less-resourced, endangered languages support language learning
- Finnish, **Russian**, German, Swedish, Spanish, Italian, French, Kazakh, North Saami, Komi-Zyrian, Udmurt, Erzya, Meadow, Mari, Sakha, (Yakut), Nanai
- Scalable: more languages to add



The main goal: System should complement & emulate a good teacher

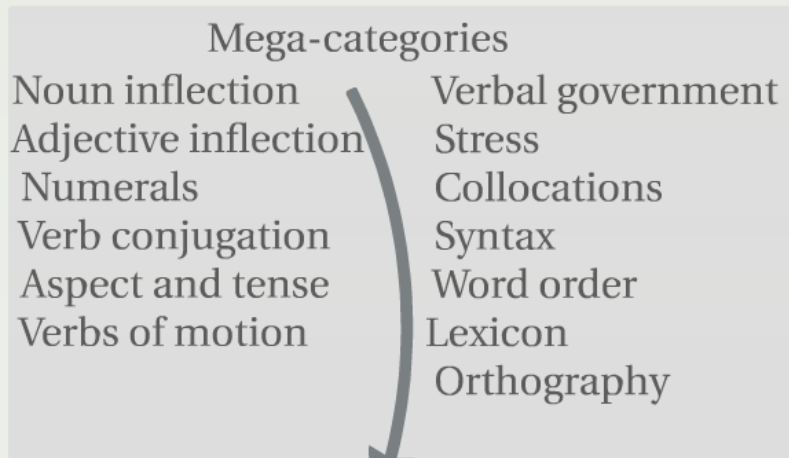
A good teacher knows:

- the subject matters — **topic-oriented**
- what the learner knows / does not know — **student-oriented**
 - Adapts to the learner's interest — uses any content for learning: whatever learner likes
 - Must not bore student with repetitive content — generate unlimited variety of exercises
- what the learner is best prepared to learn next — **level-oriented**
 - if exercises too easy too often — bore learner, quits learning
 - if exercises too hard too often — frustrate learner, quits learning

Personalization: “Zone of proximal development” (Vygotsky 1978)

Progress test:

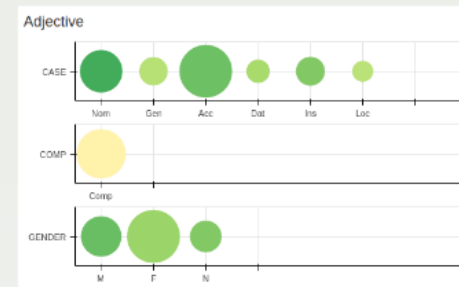
- track student performance across time
- 150 topics, grouped into 13 “mega-categories”, 4000+ tasks
- teacher defines template: how many questions from each category
- randomized selection based on template
- Results and assessment: percentage answered correctly, detailed breakdown for each category and mega-category
- can be timed (15 sec. by default)



1. Morphology of nouns
 2. Morphology of adjectives
 3. Morphology of verbs
 4. Morphology of participles
 5. Morphology of infinitives
 6. Morphology of pronouns
 7. Morphology of prepositions
 8. Morphology of conjunctions
 9. Morphology of interjections
 10. Morphology of particles
 11. Morphology of numerals
 12. Morphology of adverbs
 13. Morphology of pronouns



Category	2018-04-20 11:07	2018-05-18 16:07	2018-05-19 14:24	2018-05-19 15:36
Positive adjectives, Type: noun				
Derivations of adjectives, Type: adjective				
Base of noun and noun				
Positive adjectives, Type: verb				
Place of participles in the sentence				
Word order in sentences including direct questions				
Place of adverbs of time, place and manner				
Place of negation in the sentence				
Place of gerunds in the sentence				
Place of pronouns in a phrase				



Genitive plural of Pluralia tantum

I declension. Type 'музей-музеи, воробей-воробьи'

I declension. Type 'санаторий'

I declension. Fleeting vowels and alternations я, е, ё / й ('заяц-зайца, заём-займа')

I declension. Type 'карандаш'

I declension. Type 'адрес-адреса'

I declension. Type 'солдат-много солдат, сапог-пара сапог'

I declension. Type '-анин/-янин, -ин'

I declension. Type 'дерево-деревья'

II declension. Type 'армия'

II declension. Type на -ня

II declension. Type 'статья'

Fleeting vowel in genitive plural

Nouns with prepositions в/на ending in -у/-ю in prepositional singular

Nouns ending in -у/-ю in prepositional singular and -а in nominative plural



Revita+

Learning from stories

[Library](#)[All flashcards](#)[Progress](#)[Tests](#)[Add your own stories](#)

My language:

Russian



Choose the word best fitting the definition.

Человек, который ничего не боится.

ПОСТОЯННЫЙ

пустой

скучный

смелый

11

Show latest history

Show last completed tests

Mihail Kopotev - mihail.kopotev@gmail.com

MK Group 1

Category	2018-04-20 11:07	2018-02-19 18:07	2018-02-19 16:24	2018-02-19 15:59
Possessive adjectives. Type 'мамин'				
Declension of adjectives. Type 'хорошего'				
Usage of 'сам' and 'один'				
Possessive adjectives. Type 'лисий'				
Place of participles in the sentence				
Word order in sentences introducing direct quotations				
Place of adverbs of time, place and manner				
Place of negation in the sentence				
Place of gerunds in the sentence				
Place of pronouns in a phrase				

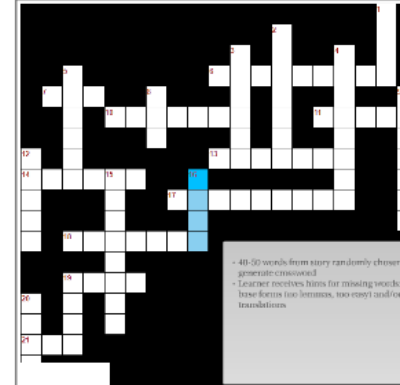
Corpus-based exercises

- Exercises stimulate **active language production** — rather than passive absorption of material
 - learner uploads stories **interesting to him/her** — to maximize practice time
 - generates exercises automatically — **unlimited variety**
 - assessment and **personalization** — level of exercises based on learner's answers given so far
-
- Skills: grammar and vocabulary (listening and speaking – in progress)
-
- Practice modes: Multi-choice, clozes, flashcards, crossword, +competition and gamification



↑ Образцы текстов			
Показать	10	▼	текстов
Поиск:		<input type="text"/>	
Название	Сложность	Прогресс	Источник
Жизнь прекрасна! по А. П. Чехову	☆☆☆	36% 80%	🔗
Космос начинается на Земле Татьяна Зимина	☆☆	0%	🔗
Викинги брали в дальнюю дорогу котов Егор Антонов	☆☆	20%	🔗
Мишкина каша Н. Н. Носов	☆	0%	🔗
Ночное происшествие М. М. Зощенко	☆☆☆	0%	🔗
Огурцы Н. Н. Носов	☆	0%	🔗

Written and Oral Skills in Russian



Огурцы

Один раз Павлик взял с собой Котыку на реку ловить . Но в этот день им не повезло: рыба совсем не . Зато когда шли обратно, они забрались в колхозный огород и набрали полные карманы огурцов. Колхозный сторож заметил их и в свисток. Они от него бежать. По дороге домой Павлик подумал, как бы ему дома не досталось за то, что он лазит по чужим огородам. И он отдал свои огурцы Котыке. Котыка пришел домой радостный: — Мама, я тебе огурцов принес! Мама посмотрела, а у него полные карманы огурцов, и за лазухой огурцы

Translate Browse

1/28

человек

Flashcards

- Left: learner receives word and types a translation
- Right: flips card, provides feedback
- Can translate from or into the target language
- Student can edit and add own flashcards

Check answer!

← Flip

Translate Browse

1/28

- human being
- human
- man
- person
- individual
- one
- Man

✓

→ Flip

- Где ты их ? — говорит **мама**.
- На .
- На огороде?
- Там, у реки, на .

- Кто ж тебе ?
- Никто, я сам нарвал.
- Значит, ?
- Нет, не украл, а так просто...

- Close quiz: obscured words are removed and base forms (lemmas) are presented in hints
- Multiple-choice quiz: obscured words are presented with distractors
- Grammatical categories are **the same used in text** — topic-oriented
- Student chooses **topics to train** — student-oriented
- Answers stored into **history** — level-oriented

23%

Проверить

5/11

Образцы текстов

Показать текстов

Поиск:

Название	Сложность	Прогресс	Источник
Жизнь прекрасна! по А. П. Чехову	☆☆☆	36% 80%	
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Мишкина каша Н. Н. Носов	☆	0% 0%	
Ночное происшествие М. М. Зощенко	☆☆☆	0% 0%	
Огурцы Н. Н. Носов	☆	0% 0%	



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Огурцы

Один раз Павлик взял с собой Котьку на реку ловить рыбу. Но в этот день им не повезло: рыба совсем не клевала. Зато когда шли обратно, они забрались в колхозный огород и набрали полные карманы огурцов. Колхозный сторож заметил их и засвистел в свисток. Они от него бежать. По дороге домой Павлик подумал, как бы ему дома не досталось за то, что он лазит по чужим огородам. И он отдал свои огурцы Котьке.

Котька пришел домой радостный:

— Мама, я тебе огурцов принес!

, нажмите
нные для

Английский

- Learner chooses a text to practice — from our corpus or from any source!
- receives translation and pronunciation
- words that learner has clicked are saved to flashcards
- A teacher can upload a text for a group of students (incl. copyrighted — no public access)

Translate

Browse

×

1/28

ЧЕЛОВЕК

person|

Check answer!

← Flip

Translate

Browse

×

1/28

- *human being*
- *human*
- *man*
- *person*
- *individual*
- *one*
- *Man*

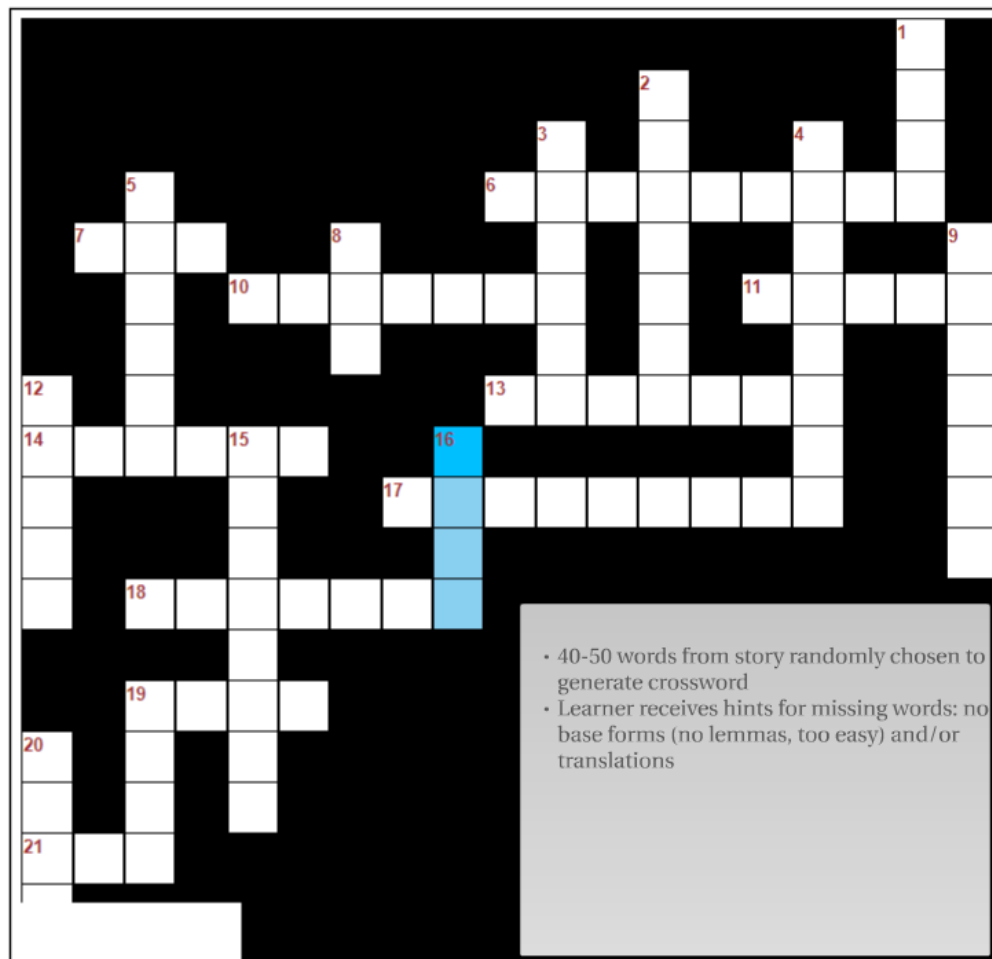


→ Flip

Flashcards

- Left: learner receives word and types a translation
- Right: flips card, provides feedback
- Can translate from or into the target language
- Student can edit and add own flashcards

Written and Oral Skills in Russian



• 40-50 words from story randomly chosen to generate crossword
• Learner receives hints for missing words: no base forms (no lemmas, too easy) and/or translations

Огурцы

Один раз Павлик взял с собой Котьку на реку ловить . Но в этот день им не повезло: рыба совсем не .

Зато когда шли обратно, они забрались в колхозный огород и набрали полные карманы огурцов. Колхозный сторож заметил их и в свисток. Они от него бежать. По дороге домой Павлик подумал, как бы ему дома не досталось за то, что он лазит по чужим огородам. И он отдал свои огурцы Котьке.

Котька пришел домой радостный:

— Мама, я тебе огурцов принес!

Мама посмотрела, а у него полные карманы огурцов, и за пазухой огурцы

- 40-50 words from story randomly chosen to generate crossword
- Learner receives hints for missing words: no base forms (no lemmas, too easy) and/or translations

— Где ты их **взял**? — говорит **мама**.

— На **огороде**.

— **На** каком **огороде**?

— Там, **у** **реки**, на **колхозном**.

— Кто ж тебе ?

— Никто, сам нарвал.

— Значит, ?

— Нет, не украл, а так просто...

- Cloze quiz: obscured words are removed and base forms (lemmas) are presented as hints
- Multiple-choice quiz: obscured words are presented with distractors

- Grammatical categories are **the same used in test** — topic-oriented
- **Student chooses topic(s) to train** — student-oriented
- Answers **stored into history** — level-oriented

23%

Проверить

6%

- Cloze quiz: obscured words are removed and base forms (lemmas) are presented as hints
- Multiple-choice quiz: obscured words are presented with distractors

- Grammatical categories are **the same used in test** — topic-oriented
- **Student chooses topic(s) to train** — student-oriented
- Answers **stored into history** — level-oriented

Adjusting to the student's level

- Revita keeps complete history of all tests and answers to all exercises
- For a given learner, it uses history to compute weights for exercise candidates:
 - exercises always done correctly receive *lower* probability
 - exercises never done correctly receive *lower* probability
 - exercises sometimes done correctly and sometimes incorrectly receive *higher* probability
- Chooses randomly from the final set of weighted candidates.
- Takes into account proximity of candidates within the exercise.





Figure 8: The full concept graph.

Conclusion

- Based on corpora and NLP tools, Revita can utilize these resources to personalize learning.
- Next steps:
 - enable collaboration through the system: sharing stories, interaction between a teacher and students
 - assessment of a story's readability to a learner's level.
 - deeper assessment of competence and progress: essential for personalization

Revita is free and remains free forever.

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Conclusion

- Based on corpus and TSP tools, Revita can assist the teacher in personal learning
- **Notes**
- create collaborations through the stories, sharing, reuse, interests between teacher and students
- assessment of a story's readability to a learner's level
- deeper assessment of competence and progress essential for personalization

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Revita
 The main goal: Support student's competences to available to good teacher

A good teacher knows:

- the study's content — **input-related**
- what the student knows — **does not know** — **student-oriented**
- what the student learned — **can they connect** for learning resources
- what the student learned — **can they connect** for learning resources
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Adjusting to the student's level

- Revita keeps changing the format of all items and exercises to all content
- For a given lesson, it uses history to compare progress to previous results
- compares progress during current session based on probability
- compares progress during current session based on probability
- compares progress during current session based on probability
- compares progress during current session based on probability
- compares progress during current session based on probability
- compares progress during current session based on probability
- compares progress during current session based on probability

Progress test:

- track reading performance across time
- track progress in 70% category and 40% category
- track progress in 70% category and 40% category
- track progress in 70% category and 40% category
- track progress in 70% category and 40% category
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- learner uploads stories, **interesting to him/her** — to maximize practice time
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