Word Engine
Health Science Programs

powered by lexxica

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Problem No. 1

Successful completion of any medical diploma or degree requires mastering several thousand special words and terms.

For example…

fibromyalgia   cholagogue
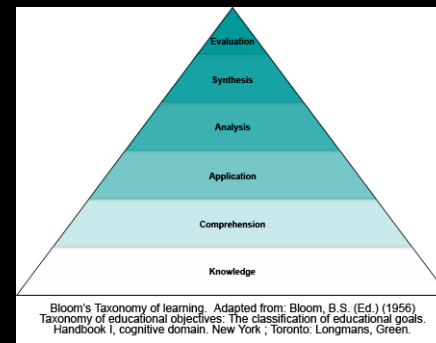immunological   carminative

Problem No. 2

First-year drop out rates are high and costly.

Many cite the onslaught of health sciences "jargon" as a primary source of frustration.

Foreign students face the greatest challenge.

Problem No. 3

Evaluation

Synthesis

Analysis

Application

Comprehension

Knowledge

Bloom's Taxonomy of learning. Adapted from: Bloom, B.S. (Ed.) (1956) Taxonomy of educational objectives: The classification of educational goals. Handbook I, cognitive domain. New York ; Toronto: Longmans, Green.

Each student has a different level of ability in each subject. Which *specific* words are needed to increase their comprehension?

Problem No. 4

Even if we knew which words to teach, the classroom is not a good place to teach vocabulary.

What can be done?

**Solution No. 1
V-Check**

An accurate and reliable vocabulary test.

Regardless of user ability, from beginner to PhD, V-Check identifies the specific vocabulary needs of each learner for each subject.

V-Check prepares a personal list of target words for each student. The exact words needed to quickly increase their subject comprehension.

**Solution No. 2
Learning Tools**

Online learning tools rapidly teach the vocabulary needed to increase comprehension.

The learning tools use spaced-repetition to promote long-term memory retention.

V-Admin

Automatically organizes V-Check scores and progress data.

Solution No. 3
V-Admin

The V-Admin service allows teachers to easily monitor student ability and learning progress.

Teachers can accurately place a student into a supportive learning group with a mix of abilities.

The Word Engine requires very little classroom time because the learning process is autonomous.

Lexical coverage analysis

Lexical coverage describes the percentage of known words in a text.

If there are too many unknown words the meaning of the text cannot be understood.

How many is too many?

Faligiamobry and multiple chemical sensitivities (MCS) are, like FSC, recently recognized disorders with a substantial overlap of amoplygootmyst. The only difference in dogsinctia criteria for faligiamobry and FSC is the requirement of kalluesclutsome pain in faligiamobry and fatigue in FSC. The likelihood of a patient being diagnosed as having faligiamobry or FSC is dependent upon whether a tohmerualogist or an potherodic specialist is consulted.

Medical text at 95 percent coverage

3 of 64 words missing

Fibromyalgia and multiple chemical sensitivities (MCS) are, like CFS, recently recognized disorders with a substantial overlap of amoplygootmyst. The only difference in dogsinctia criteria for fibromyalgia and CFS is the requirement of musculoskeletal pain in fibromyalgia and fatigue in CFS. The likelihood of a patient being diagnosed as having fibromyalgia or CFS is dependent upon whether a tohmerualogist or an orthopedic specialist is consulted.

Universal coverage thresholds
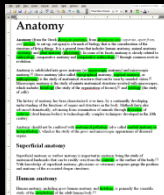
Below 80 percent coverage, reading comprehension is almost impossible.
(Hu & Nation, 2001)

Above 95 percent coverage, it becomes possible to read without using a dictionary.
(Laufer, 1989)

The Goal

The goal is to get as many students as possible
to 95% coverage as quickly as possible.

How can we best do that?

Corpus analysis

<u>Ex: Gray's Anatomy</u>

212,440 total words

8,751 different words

6,211 words constitute 99% of all of words occurring

4,109 words constitute 95% of all of words occurring

3,200 of the 6,211 words are general English vocabulary

Students need from 1,000 to 3,000 Anatomy-specific words
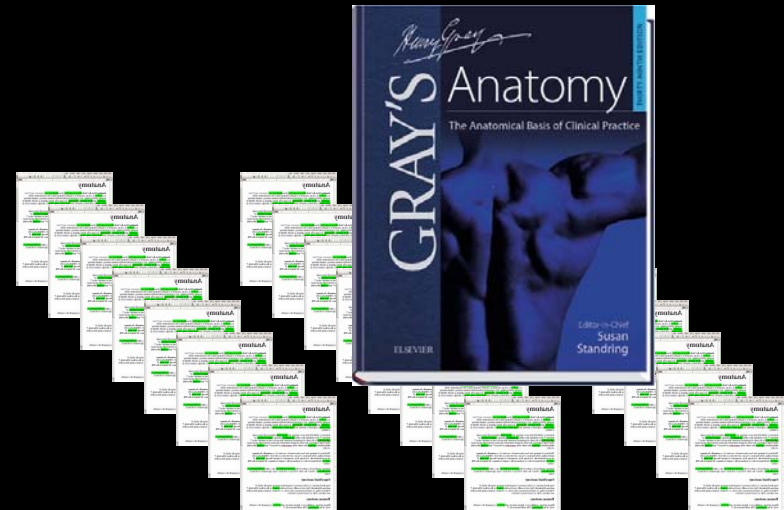
Preliminary Data

Corpus analysis

Gray's Anatomy

'tissue' occurs frequently

'carminative' is seldom used

The most frequently occurring words (high-frequency vocabulary) always contribute the most to coverage.

Preliminary Data

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Relationship between frequency and coverage

Preliminary Data

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Corpus analysis tells us which words are needed to comprehend Anatomy.

V-Check identifies which words each student is missing so they can focus their study time.

V-Check prepares a personal target word list for each student based on needs

Anatomy words ranked by frequency of occurrence

8,751

Low-frequency

cholagogue

Example of a student with 91% existing coverage of Anatomy

Unknown high-frequency words

Coverage Goal 95%

4,109

obturator

These are the specific high-frequency words that will increase coverage to 95%

diagnostic

2,250

High-frequency

muscle

body

91% coverage from known words

1

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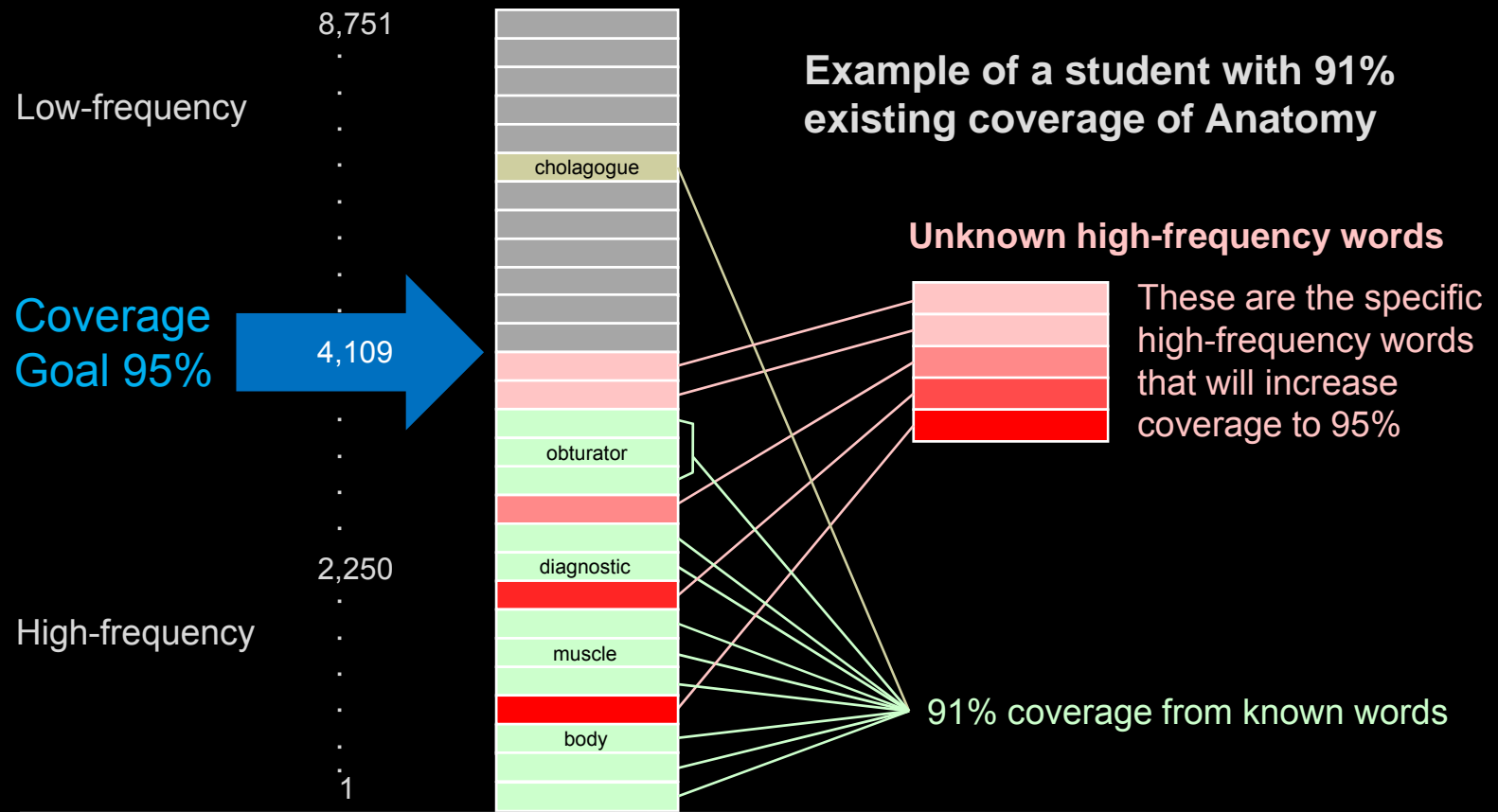
Optimal sequence of personal target words
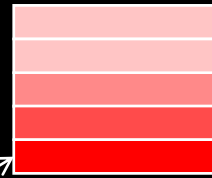
Start here with the
highest frequency words

Online learning tools teach multiple aspects of word knowledge

Definitional knowledge

Visual recognition
speed (automaticity)
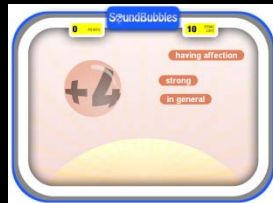
Aural recognition
speed (automaticity)

Definitional knowledge

n cholagogue

a substance that makes
the gallbladder contract

Click to hear it

Click for complete definition

Visual recognition speed

something that makes the gallbladder contract

cholagogue   titers   peptide

Visual recognition speed – Multilingual

It makes the gallbladder contract

legal agreement

animal with six legs

a viewpoint

بروتين

cholagogue   titers   peptide

Aural recognition speed

two or more linked amino acids

The concentration of a substance in solution

a substance that makes the gallbladder contract
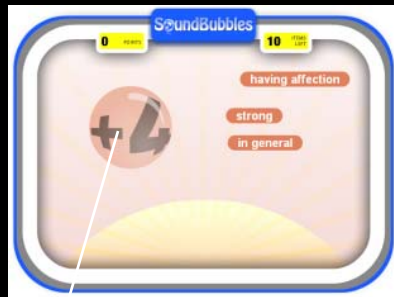
Click to hear it pronounced

"peptide"

How do we overcome short-term memory loss?
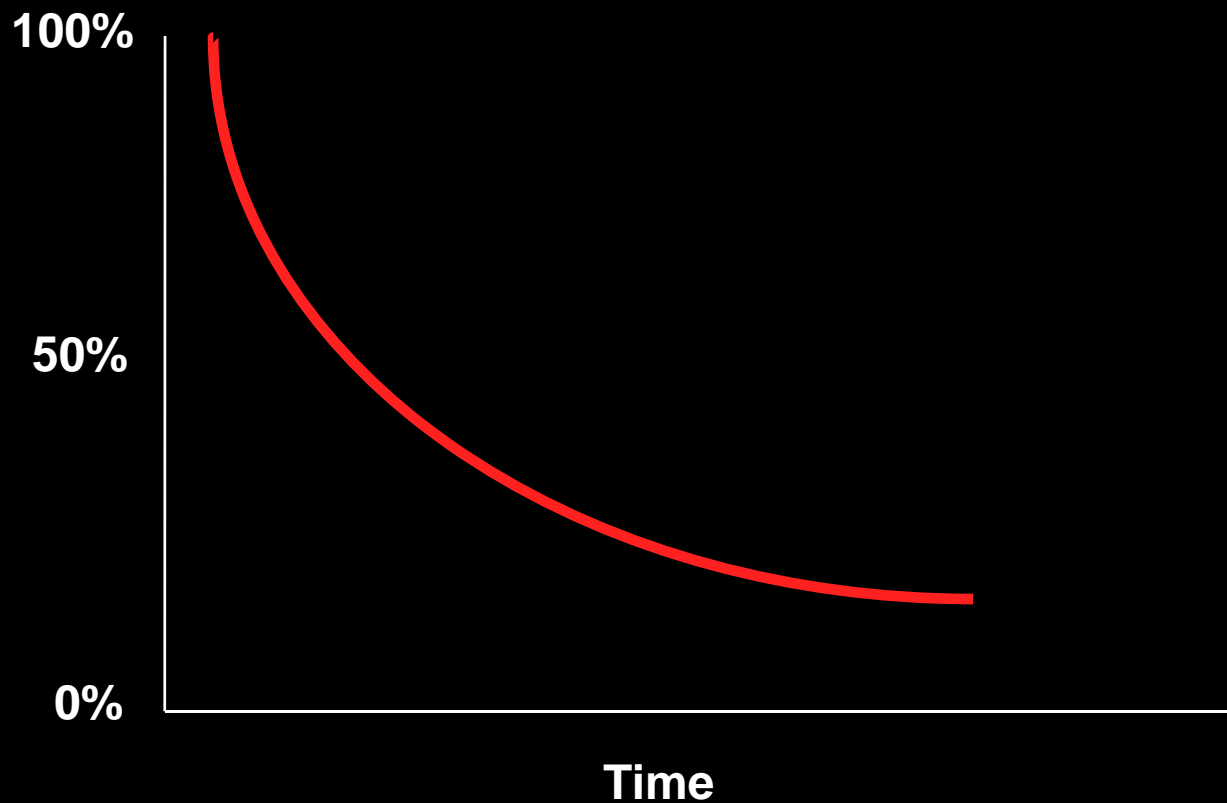
Dr. Ebbinghaus' Forgetting Curve
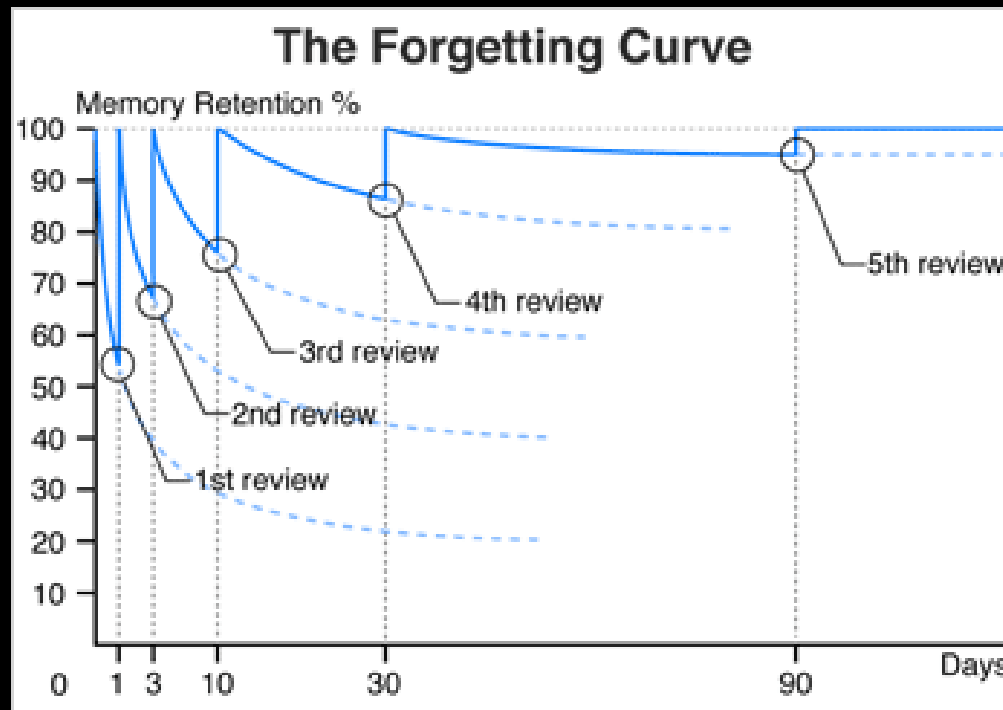
Ebbinhaus (1885), Leitner (1972), Pimsleur (1967), Mondria, (1994)

This research supports all spaced repetition systems

A personal spaced repetition database

Spaced repetition database repeats new words at increasing time intervals until each is fully acquired.
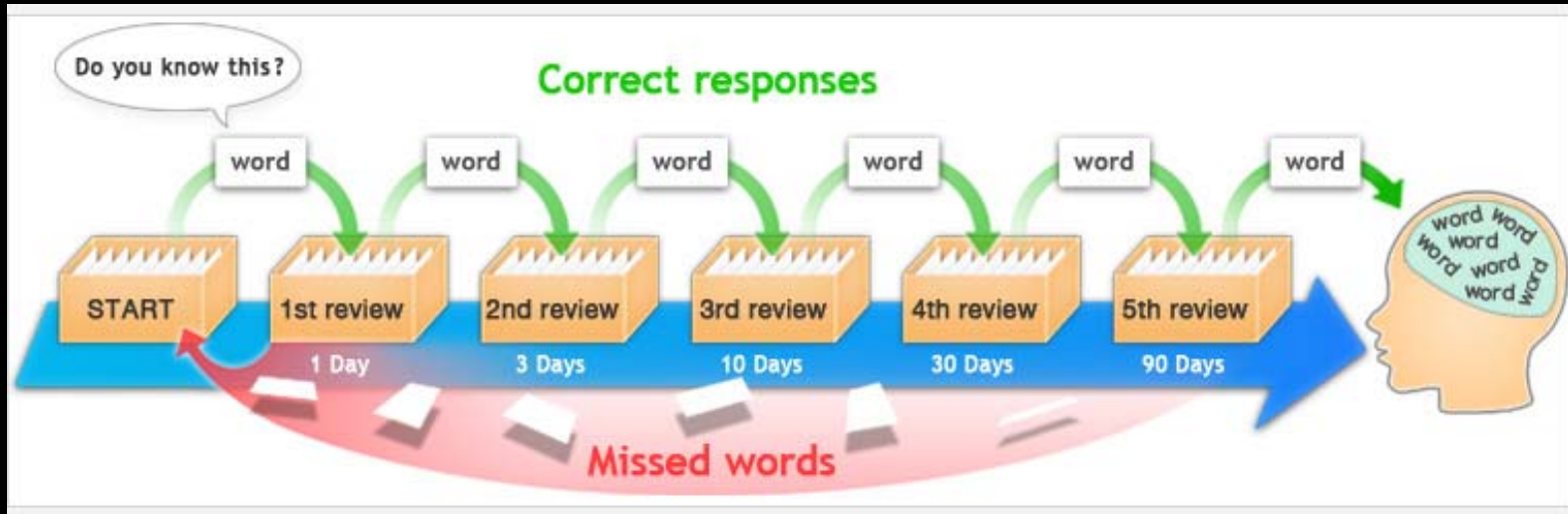
Learning tools provide progress feedback
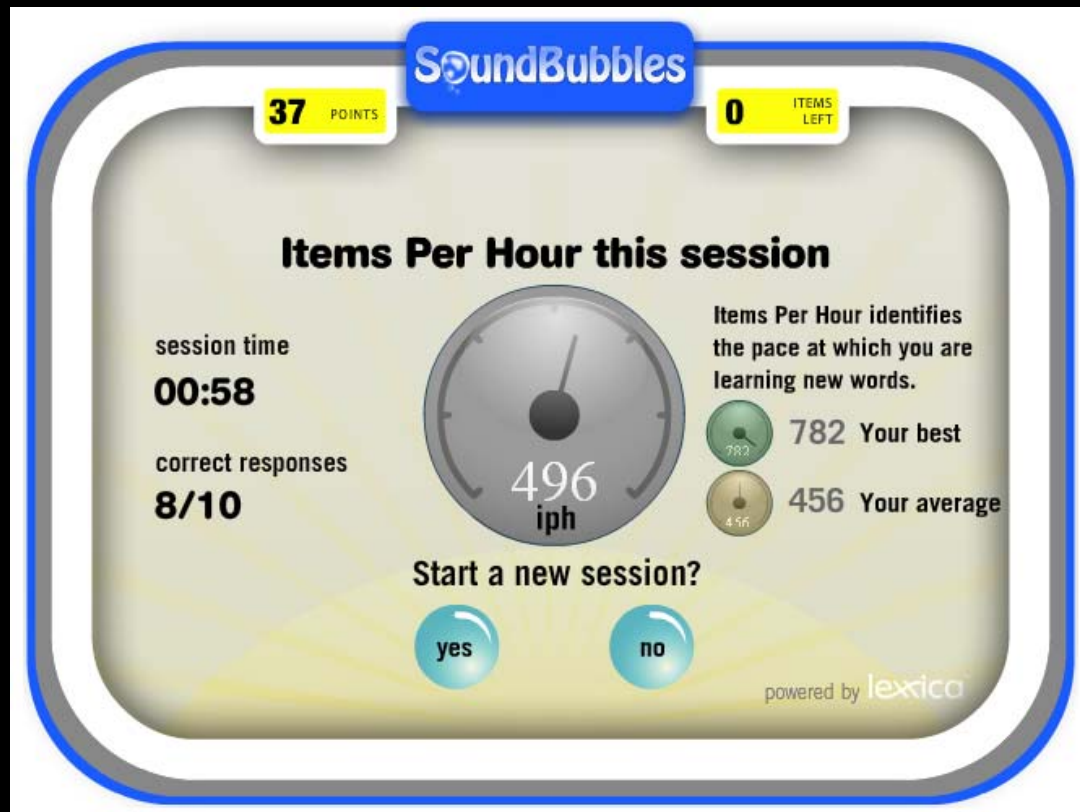
Example Medical School Partnership

Partner's logo

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Coming September 2008

Word Engine
goes mobile…

Getting started

Partner enters license agreement with Lexxica.

Lexxica completes corpus analysis work.

Lexxica calibrates testing lexicons.

Lexxica prepares teaching definitions.

Partner distributes access codes to learners.

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