



JALT2020
O N L I N E
COMMUNITIES OF
TEACHERS & LEARNERS

Vocabulary SIG Forum and Annual General Meeting #299 ❤️

Tue, Nov 17th, 20:00 - 21:30 JST

15-minute online presentation by:

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The Indirect Spaced Repetition Concept



(Acknowledgement)

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*This presentation is based on the following article:
http://vli-journal.org/wp/wp-content/uploads/2020/10/VLI_9_2.pdf#page=13

Presentation Flow

- 1- Introduction**
- 2- Literature Review**
- 3- Short demo video**
- 4- Results & considerations**
- 5- Selected References**



Introduction



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“Practice makes Perfect”

There are a million excuses
So, let's make “practice”
part of the curriculum!

~both inside and out
of the classroom

Let's schedule “practice”

If 3 groups of students only have 25 minutes to study new words/phrases within 9 days, **which group will perform best on post-tests?**

Table 1. Typical Comparative Example of Expanded, Uniform, and Massed Algorithms

Main Algorithm Types & Intervals	Initial Study	Interval ①	Interval ②	Interval ③	Interval ④
“Expanded” (x type) (~12h start → x 2)	day 1 (start point)	day 1 or 2 (~12 hours)	day 3 (1 day)	day 5 (2 days)	day 9 (4 days)
“Uniform” (same) (→ every 2 days)	day 1 (start point)	day 3 (2 days)	day 5 (2 days)	day 7 (2 days)	day 9 (2 days)
“Massed learning” or (cramming)	(Total study time compressed into a single session) E.g. If a study session lasts 5 minutes: 5 consecutive sessions x 5 = 25 minutes total.				

A →

B →

C →

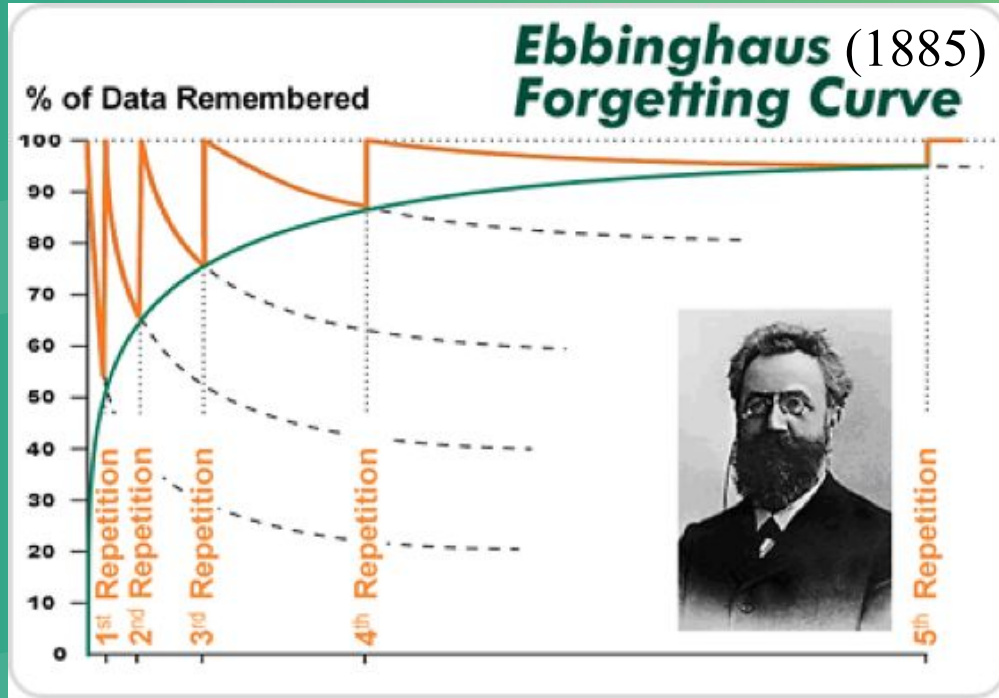
There are actually multiple types of “Expanded Algorithms”,
 Perhaps it would be interesting to compare these in future studies

(Table 2) Schedule Example for Comparison between (+, x and a^b) Expanded Algorithms

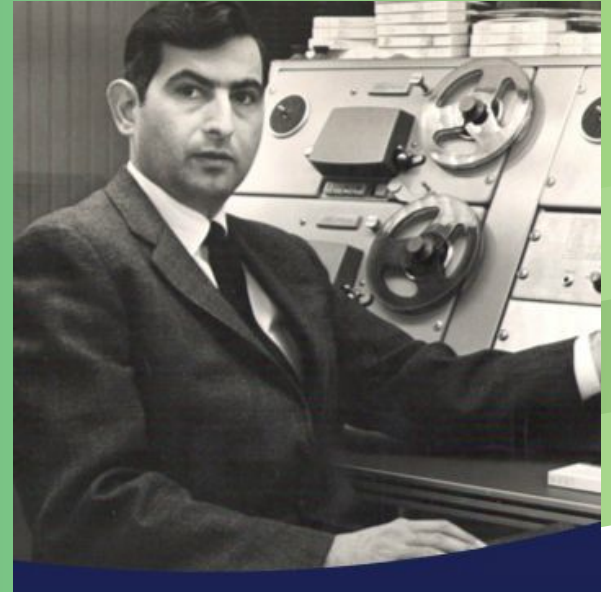
Factor of 2 (5 Intervals)	Initial Study	Interval ①	Interval ②	Interval ③	Interval ④	Interval ⑤
“Expanded” (+ type) (previous# \rightarrow + 2 days)	day 1 (start point)	day 3 (2 days)	day 7 (4 days)	day 13 (6 days)	day 21 (8 days)	day 31 (10 days)
“Expanded” (x type) (\rightarrow x 2)	day 1 (start point)	day 1 (later)	day 3 (2 days)	day 7 (4 days)	day 15 (8 days)	day 31 (16 days)
“Expanded” (a^b type) (E.g. \rightarrow $\sim 19\text{sec}^{(\#)}$)*	day 1 (start point)	day 1 (19 secs)	day 1 (6 mins)	day 1 (2 hours)	day 3 (36 hours)	\sim day 31 ($\sim 28\frac{1}{2}$ days)

*the more precise a^b number here was 18.9 seconds

Yes, “Practice makes Perfect”



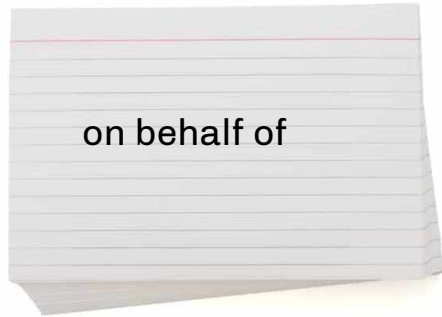
Paul Pimsleur (1967)



“graduated interval recall”

And “spaced repetition” makes it even better!

表 Side A card#192



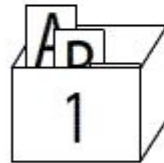
裏 Side B card#192



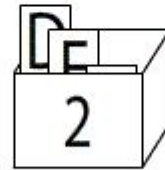
Sebastian Leitner (1972)

The “Leitner System” or “Box System”

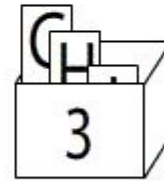
Session 1



Daily



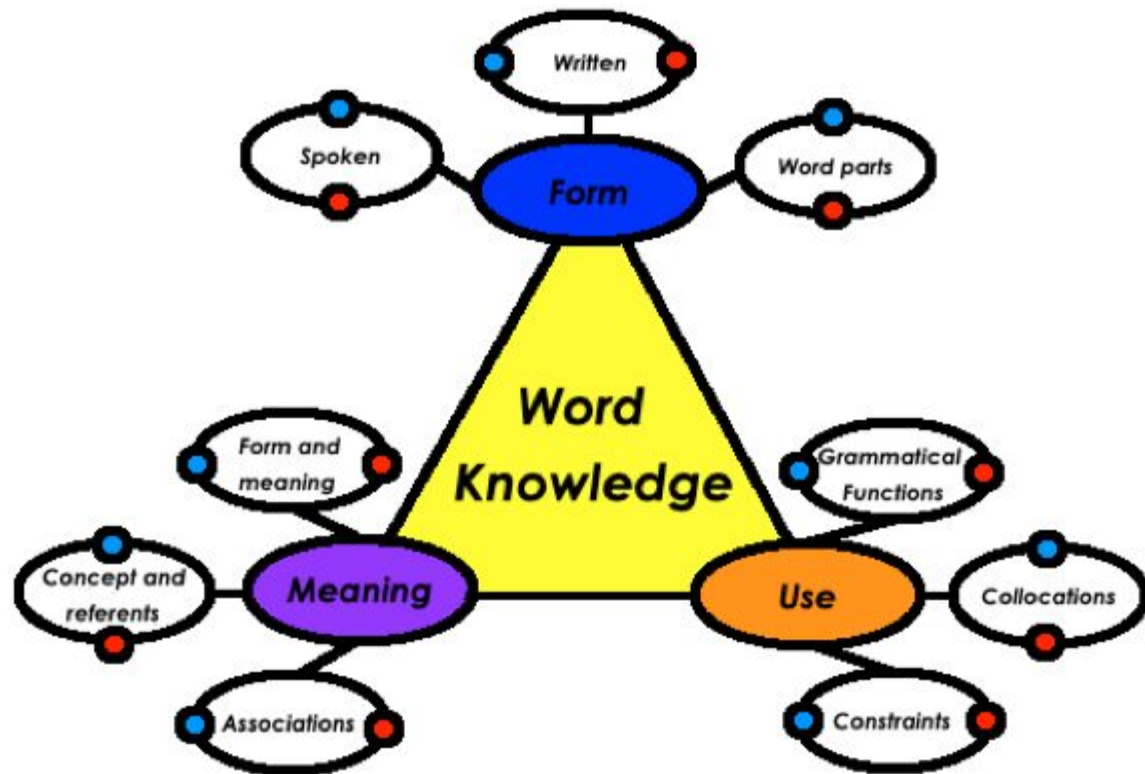
Weekly



Monthly

*simplified example

The Molecular Level of "Word Knowledge"



- = Receptive knowledge
- = Productive knowledge

What is involved in "word knowledge" (Nation, 2001)



Spaced-Interleaved Task Examples and Interval Breakdown for Indirect Spaced Repetition Software/System (ISRS)

Tier Q# level	Flow L1 = native language L2 = second language	Task Type	Task/Interval Route :		
			↓ when recalled/answered successfully ↻ or ← when recalled/answered unsuccessfully (cooldown timer before next review, h = hour, d = day)		
Ⓜeaning Q#1 word or phrase	L2 audio to L1 recall	Recall Check	↻ Session 1 (initial) ↓	← Session 7 (6d) ↓	← Session 13 (162d) ↓
Ⓜeaning Q#2 word or phrase	L1 word/phrase to L2 recall	Recall Check	↻ Session 2 (8h) ↓	← Session 8 (9d) ↓	← Session 14 (243d) ↓
ⓕorm Q#1 word or phrase	L2 audio to L2 word/phrase	Spelling	↻ Session 3 (16h) ↓	← Session 9 (18d) ↓	← Session 15 (486d) ↓
ⓕorm Q#2 sentence	L2 (blank) to L2 sentence	Fill-in-the-blank	↻ Session 4 (1d) ↓	← Session 10 (27d) ↓	← Session 16 (729d) ↓
Ⓛse Q#1 sentence	L2 sentence to L1 sentence	Writing	↻ Session 5 (2d) ↓	← Session 11 (54d) ↓	← Session 17 (1458d) ↓
Ⓛse Q#2 sentence	L1 sentence to L2 sentence	Writing	↻ Session 6 (3d) ↓	← Session 12 (81d) ↓	← Session 18 (2187d) ↓ end
(Optional)* Q#7 Text	Reading and Listening (L2 to L2)	(Voiced) Reading	↻ back to top ↑ ↻ back to top ↑ or end (option)		

*For increased effectiveness, ISRS can be combined with a fluency-building (voiced) reading task. For example, studying a set of word items, which compose a text could trigger such an activity.

Figure X.
Aspects of word knowledge are integrated as part of ISRS tasks

Based on “What’s involved in word knowledge” (Nation, 2001)

Receptive = R
Productive = P

Type	Sub-Type		(Nation, 2001) explanation / example	L	ISRS task #
Form	Spoken	R	What does the word sound like?	<input checked="" type="radio"/>	1, 2, 3, (5, 6)
		P	How is the word pronounced?	<input type="radio"/>	if 7 is included
	Written	R	What does the word look like?	<input checked="" type="radio"/>	2, (3, 4, 6)
		P	How is the word written and spelled?	<input checked="" type="radio"/>	3, 4, 6
	Word parts	R	What parts are recognizable in the word?	<input type="radio"/>	if included/highlighted
		P	What word parts are needed to express the meaning?	<input checked="" type="radio"/>	Not included as a task
Meaning	Form and meaning	R	What meaning does this word form signal?	<input type="radio"/>	1, 5
		P	What word form can be used to express this meaning?	<input type="radio"/>	2, 4, 6
	Concept and referents	R	What is included in the concept?	<input type="radio"/>	if included in WL
		P	What items can the concept refer to?	<input type="radio"/>	if included in WL
	Associations	R	What other words does this make us think of?	<input type="radio"/>	2, 4, 6
		P	What other words could we use instead of this one?	<input type="radio"/>	2, 4, 6
Use	Grammatical functions	R	In what patterns* <u>does</u> the word occur?	<input type="radio"/>	if included in 4, 6
		P	In what patterns* <u>must</u> we use this word?	<input type="radio"/>	if noticeable in 4, 6
	Collocations	R	What words or types of words occur with this one?	<input type="radio"/>	4, 6, (5)
		P	What words or types of words must we use with this one?	<input type="radio"/>	6
	Constraints on use (register, frequency...)	R	Where, when and how often would we expect to meet this word?	<input type="radio"/>	4, 6, (5)
		P	Where, when and how often can we use this word?	<input type="radio"/>	6

*the number of patterns is dependant on the number of entries for a single word & word counting unit used

Let's "drink" to a Lemma, Flemma, and Word Family Breakdown (Reference Table)
 The word "drink" was selected for its complexity: homonyms among various parts of speech (PoS) noun, adjective & verb "drink, drunk", moreover its irregular verb patterns (→drank, drunk)

Breakdown of the following (selection of 12) uncontextualized forms of "drink":
 drank, drink, drinkable, drinker, drinking, drinks, drunk, drunker, drunkest, drunkenly, non-drinker, undrinkable

Example and/or Definition (Context) with notes		① All Forms & Meanings	② Plemma ⁽¹⁾ "Plurality" ⁽²⁾⁽³⁾	③ Lemma "Pure" ⁽⁴⁾ Lemma	④ Flemma "Unpure" Lemma	⑤ Word Family (all related forms)
..to drink water..	PRES	drink (V-1)	drink (V-1)	drink (V)	drink	drink
..he/she/it drinks..	3SG	drinks (V-1)				
..am/are/is/was/were drinking..	PROG	drinking (V-1)	(* ⁽⁵⁾) drank (V-1)	(* ⁽⁵⁾) drunk (V-1)		
..drank water yesterday..	PST	drank (V-1)				
..have/has/had drunk..	PST PART	drunk (V-1)	drink (N)	drunk (N)		
..to drink in the view.. (*expression)		drink (V-2)	drunk (N)			
a person who drinks too much	SG	drunk (N)	drink (N)	drinking (N)		
..many beverages..	PL	drinks (N)	drunk (N)			
a beverage	SG	drink (N)	(Δ) drinking (N)	(Δ) drinking (N)		
..drinking is.. /..(dis)like drinking..	vN / GER	drinking (N)	drunk (ADJ)	drunk (ADJ)		
..drunk (person)..		drunk (ADJ)	drinker (N-1)		drinker	
..(person) gets drunker faster..	COMP ADJ	drunker (ADJ)	drinker (N-2)	drinker (N)		
..(person) was the drunkest of all..	SUPL ADJ	drunkest (ADJ)	drinker (N-3)		(* ⁽⁶⁾) non-drinker (N)	
a person who drinks	SG	drinker (N-1)	drinker (N)	(* ⁽⁶⁾) non-drinker (N)		
a large brownish European moth	SG	drinker (N-2)	drinker (N)		(* ⁽⁶⁾) non-drinker (N)	
a container for animals to drink from	SG	drinker (N-3)	drinker (N)	(* ⁽⁶⁾) non-drinker (N)		
..he/she is a non-drinker..	hyphenated	non-drinker (N)	drinker (N)		(* ⁽⁶⁾) non-drinker (N)	
..drinkable (beverage)..		drinkable (ADJ)	drinker (N)	(* ⁽⁶⁾) non-drinker (N)		
..undrinkable (beverage)..		undrinkable (ADJ)	drinker (N)		(* ⁽⁶⁾) non-drinker (N)	
..to sing drunkenly..		drunkenly (ADV)	drinker (N)	(* ⁽⁶⁾) non-drinker (N)		
	#items for vocab list	20	11-15		8-10	5-6

⁽¹⁾ termed coined by the author, P from Plurality
⁽²⁾ allows a plurality of entries under same PoS
⁽³⁾ allows (*⁽⁵⁾) irregular inflectional patterns to be separate items
⁽⁴⁾ distinguishes between PoS
⁽⁵⁾ Should verbal Nouns/Gerunds be considered as a sort of inflectional affix? (debate)
⁽⁶⁾ Should "hyphenated affixes" such as "non-" in non-drinker be considered as a valid prefix? (debate)
⁽⁷⁾ WF⁽⁵⁾ & F⁽⁶⁾ are more easily computer countable (no PoS)
⁽⁸⁾ for advanced learners, WF may be enough to infer most forms

Notable Lists	?	Japanese ESL textbooks' index, dictionaries	Lemma Corpus Ex: COCA lemma list	New General Service List (NGSL)	General Service List (GSL)
Counting Too(s) ⁽⁵⁾	← Man & Computer , Computer →				
Ensued study ⁽⁶⁾	← Immense/Slow yet Profound , Light/Quick yet Limited →				

Word counting unit selection, and list building (including example sentences etc...) will also have an impact on:

"Aspects of Word Knowledge Coverage"

Video



<https://www.youtube.com/watch?v=iSrOutmclvY&t=1s>

(Table 5) Post-Project Survey Results & Notable Comments. (Lafleur, 2015)

Perceptions (5 point Likert-scale, 5= strongly agree) and Comments (P#= Participant #)	Mean	SD
(Usefulness) I think that this software is an effective tool for JHS students learning English.	3.71	0.76
“I think this software would be better if it provided the users with more detailed records of their progress and a daily performance report; this could be used as a reminder to login. Also, some sentences took some time to be loaded (lag).” (P6)		
(Usability) I think that this software would be easy to use for JHS students.	3.43	0.98
“For people who aren’t accustomed to using computers or smartphones, using this software may prove a little difficult. But most students will be able to easily use it without any trouble.” (P4)		
(Enjoyment) I think that JHS students would enjoy using such software as part of their study.	3.57	0.98
As users progress through the software, I think that they need to have a better sense of their progress. For example, just as in a game, the screen could change and show their level going up. (P2)		
(Consideration) I think that teachers would like to incorporate such software in their class.	3.86	1.21
I think that with the cooperation of teachers this tool/software’s effectiveness can be even greater for students. I want to incorporate such a system as part of the routine of my future classes. (P3)		

Show Stats for the currently selected Wordlist(s):
 Between 05/11/2020 and 07/26/2020
 For selected Group(s) (25 users)

Total Days :	77	Total Cards studied :	1046
Active Days :	3	# of cards reviewed	733
Inactive Days :	74	New cards done	313
Total (min)	1161	All review done days :	3
Study (min)	1161	15+ min days :	7
# Menu (min)	0	10 new cards day :	9

Download CSV



EDIT GROUP INFORMATION

Edit Group Name : SW2(YI)

(Opt.) Wordlist selection :

(Opt.) # Weekly Card Goal : 250

(Opt.) Starting Week Day :

(Opt.) Starting Time : 14:40

(Opt.) Class Start Date : 2020/10/13

(Opt.) Class End Date : 2020/12/22

Save

Cancel

OTHER LISTS

- GROUP : Junior High**
- New Horizon 1 Demo**
- General N-Hor
- GROUP : Academic**
- e-NAWL**
- eNAWL 001-100
- eNAWL 101-200
- eNAWL 201-300
- eNAWL 301-400
- eNAWL 401-500

Future related ISRS research includes:



- *Research differences between (+, x, a^b) expanded intervals
- *Add/research gamification features (leaderboards, awards, etc...)
- *Research teachers' perspectives on word counting units
- *Create common core elementary/junior high level word lists
- *Testing and supplementing the New Academic Word List (NAWL) (Browne et al., 2013) with example sentences and translations (Kanazawa & Lafleur, 2019).

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JALT Vocabulary SIG

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Contact Information, Presentation Slides & More



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Indirect Spaced Repetition System
is a free public domain concept:



(ISRS) is also freely accessible for
students & researchers to use on
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eigomemo.com

Thank you and feel free to contact me anytime!