

Longitudinal Measurement of Vocabulary Size of Japanese Junior High School Students: Developing the Vocabulary Size Test for Beginner Learners

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Introduction

Vocabulary plays an important part in L2 learning at the beginner level, thus making its inquiry an essential part of second language acquisition research. However, precise measurement of English vocabulary size of Japanese junior high school students has not been attained due to the lack of appropriate measurement tools for beginner learners. The present study examines the growth of the vocabulary size of Japanese junior high school students throughout their three-year English learning.

Previous Research

- learners' vocabulary size is strongly related to their proficiency in the language.
- much research has been conducted to measure learners' vocabulary size and propose that it strongly correlates with other language proficiencies both in L1 and L2 (Laufer, 1992; Meara, 1996).
- a variety of vocabulary size tests have been developed and used as a standard for measuring learners' proficiency (Aizawa, 1998; Meara, 1992; Mochizuki, 1998; Nation, 1990, 2001; Schmitt, Schmitt, & Clapham, 2001)

Vocabulary size tests are important both in the field of research and education.

In the Field of Research

Pre-test



to confirm participants' equivalency as a pre-test before the research

Post-test



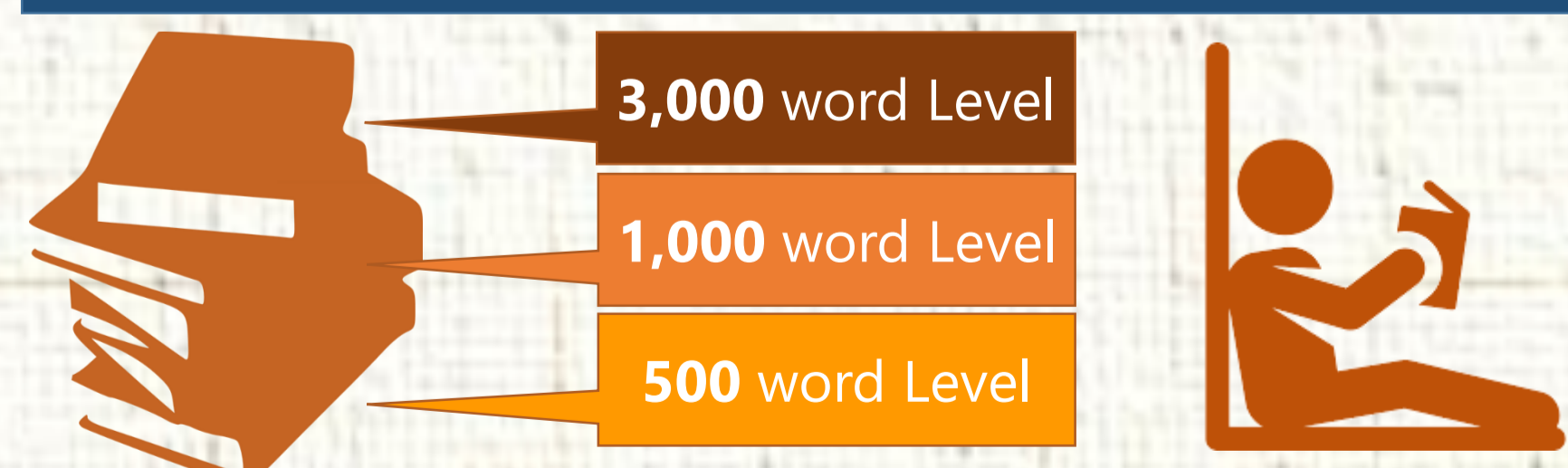
to verify the target treatment as a post-test or a delayed-test comparing the experimental group and the control group

In the Field of Education

Placement Test



Indicator of Suitable Material



Criteria of Achievement of the Course

3,000 word Level



My Research

Vocabulary Size Test for Japanese Junior High School Students

- The vocabulary size test was developed from the vocabulary list based on the authorized textbooks used in Japanese English classes (Sato, 2016).
- The vocabulary items were listed according to the index attained from following formula.

$$\text{Ranking criteria of the list (ease-prime index)} = \frac{\text{range} \times \text{frequency}}{\text{student grade level}}$$

	language	finally	energy
frequency	817	836	840
range	6	6	5
studying grade	1.5	2	2.6
index	544.67	418.00	323.07

- Four levels: Level 1 (500 word level), Level 2 (1,000 word level), Level 3 (1,500 word level), and Level 4 (2,000 word level).
- Words randomly extracted from the item bank = the test used in July and the one used in December produced different vocabulary items, even in the same wordlevel.
- Multiple choice test: participants choose the Japanese definitions corresponding to the test items.

中学生のための語彙サイズテスト(500 word Level)

ID 名前
1~30の単語の意味として最もふさわしいものをa~dの中から選び記号を○で囲みなさい。

1. us
a. ~です。~である。~にある。~にいる
b. 人々
c. ~を食べる
d. 私たちに/を

8. happy
a. 幸せな
b. 学級、授業、クラス
c. (ある状態に) なった、(〜を) もらった、得た
d. ~を愛する、大好きである

Participants

- A total of 486 Japanese junior high school students from a junior high school attached to Hirosaki University
- All participants have studied English from the first grade in the elementary school attached to Hirosaki University using authorized junior high school textbooks.
- To observe the growth of the participants' vocabulary size across the grade levels.
- To analyze a pattern of participating students' vocabulary growth by the frequency level.

Procedure

- The participants' vocabulary size was measured five times over the period of three academic years at intervals of six months.
- One level was administered per session allowing sufficient time for the participants to finish the whole test. The approximate testing time was 15 minutes per session.

2016		2017		2018
July	Dec	July	Dec	July
500WL	500WL	500WL	500WL	500WL
1000WL	1000WL	1000WL	1000WL	1000WL
1500WL	1500WL	1500WL	1500WL	1500WL
2000WL	2000WL	2000WL	2000WL	2000WL

Results & Discussion

1. Vocabulary size of the participants at July Test

Table 1

Vocabulary Size of Participating Junior High School Students

	1st year	2nd year	3rd year
n	161	160	165
mean	1303.6232	1482.0833	1676.4646
SD	301.2168	315.8162	270.8512
95% CI	[1256.74, 1350.50]	[1432.77, 1531.39]	[1634.83, 1718.10]
Min	633.33	966.67	1200.00
Max	1966.66	1983.33	1983.33

Note. n = number of the participants; SD = standard deviation; CI = confident interval.

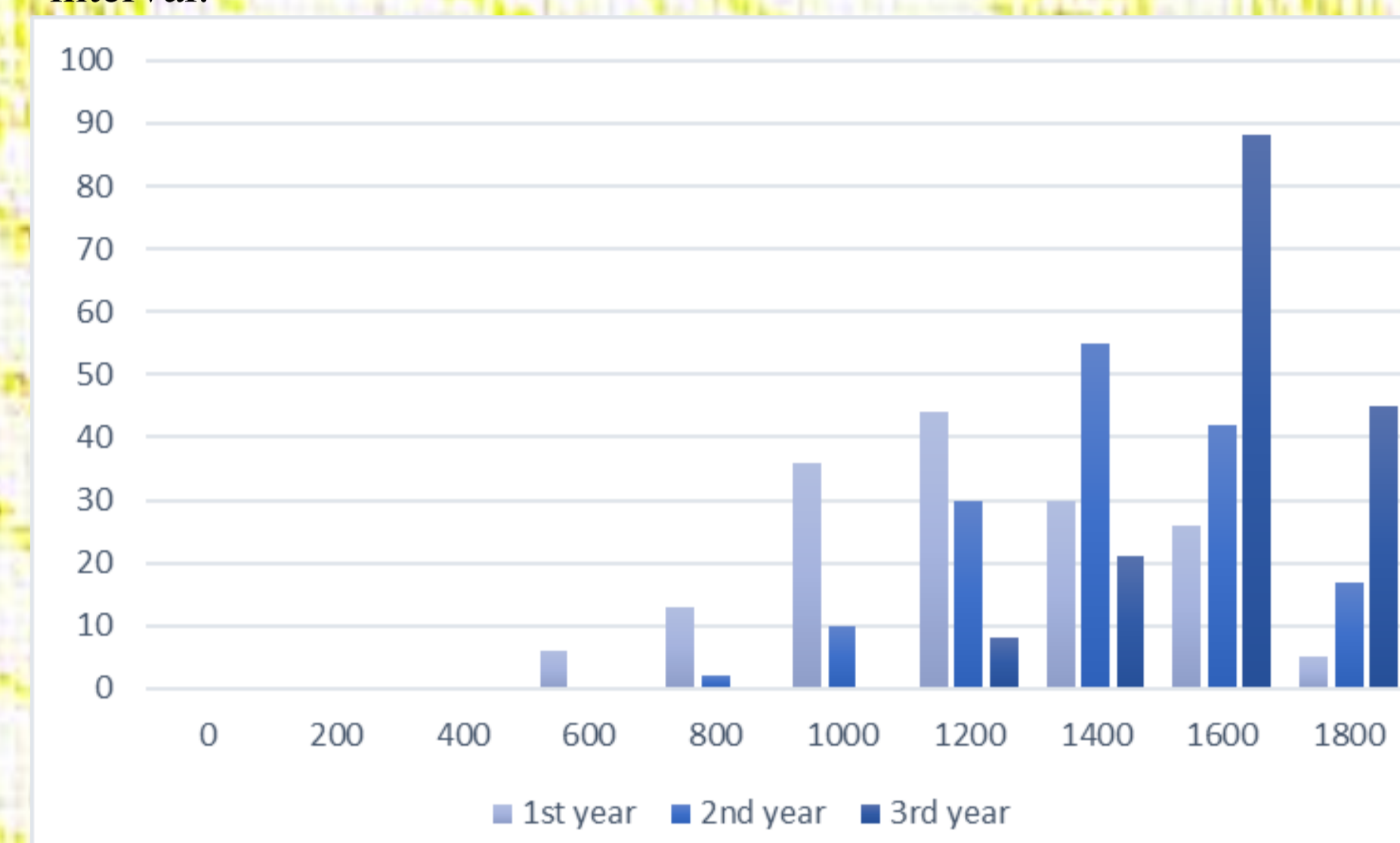


Figure 1. Vocabulary Size of Participating Junior High School Students

- Huge range of vocabulary size, especially in the first year students.
- The maximum vocabulary size is not different in 1st year to 3rd year students
- Ceiling effect is observed in the score of the 3rd year students.

- Difficulty of vocabulary instruction in Japanese classroom
- Necessary to revise the vocabulary test capable of a larger vocabulary size.

2. Longitudinal Development of Vocabulary Size

Table 2

Descriptive Statistics of Longitudinal Vocabulary Size Development

Test Level	Test Time	Mean	SD	95% CI	
500 WL	1st year	Jul.	23.62	4.42	[22.98, 24.26]
		Dec.	26.08	4.89	[25.44, 26.72]
	2nd year	Jul.	28.87	2.58	[28.23, 29.52]
		Dec.	28.87	2.58	[28.23, 29.52]
	3rd year	Jul.	29.62	1.34	[28.98, 30.26]
		Dec.	29.62	1.34	[28.98, 30.26]
1000 WL	1st year	Jul.	21.76	4.75	[21.12, 22.40]
		Dec.	21.96	4.58	[21.31, 22.60]
	2nd year	Jul.	25.15	4.05	[24.51, 25.79]
		Dec.	25.15	4.05	[24.51, 25.79]
	3rd year	Jul.	28.10	2.25	[27.46, 28.75]
		Dec.	28.10	2.25	[27.46, 28.75]
1500 WL	1st year	Jul.	18.94	4.82	[18.29, 19.58]
		Dec.	20.64	3.74	[20.00, 21.28]
	2nd year	Jul.	21.73	4.01	[21.08, 22.37]
		Dec.	21.73	4.01	[21.08, 22.37]
	3rd year	Jul.	24.72	3.98	[24.08, 25.36]
		Dec.	24.72	3.98	[24.08, 25.36]
2000 WL	1st year	Jul.	13.36	4.21	[12.71, 14.01]
		Dec.	16.53	4.65	[15.89, 17.18]
	2nd year	Jul.	18.42	4.35	[17.78, 19.06]
		Dec.	18.42	4.35	[17.78, 19.06]
	3rd year	Jul.	20.79	4.13	[20.15, 21.43]
		Dec.	20.79	4.13	[20.15, 21.43]

Note. The maximum score for each level of the vocabulary size test is 30.

Table 3

Results of the Two-Way ANOVA for the Vocabulary Size Test

Sources	SS	df	MS	F	p	η ²
Test Time	39877.20	3	13292.40	830.34	< 0.001	830.341
Test Level	14182.62	4	3545.65	221.49	< 0.001	221.488
Interaction	932.65	12	77.72	4.86	< 0.001	4.855
Error	47384.74	2960	16.01			
Total	102377.20	2979				

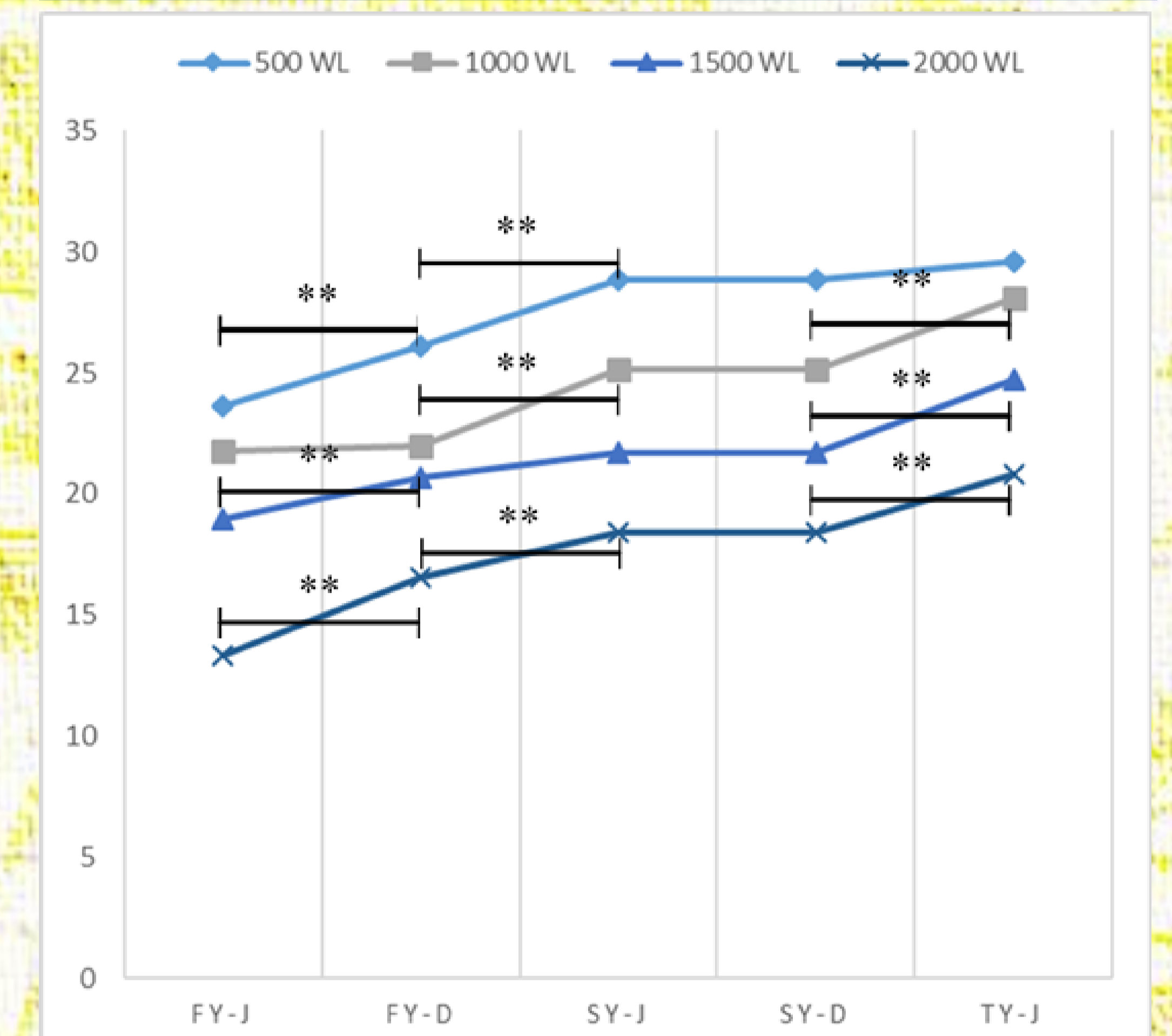


Figure 2. Results of the Two-Way ANOVA

- Students' vocabulary growth by the frequency level reveals a distinctive pattern for each level
- In particular, for second year (SY-J – SY-D), there is a temporary stagnation in the vocabulary development.

Vocabulary instruction and material choice according to the pattern of vocabulary development.

References

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