

# Developing and Evaluating an E-Learning Material for Speaking Practice with the Latest AI Technology

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- Future Possibilities

# Problems in Teaching Speaking in Japan

- Japanese EFL teachers' pronunciation
- High dependency on native speakers
- Large class size (30 – 40 students / class)
- Lack of teaching strategies
- Lack of effective teaching materials

# Expectations for improving speaking skills

- University Education Reform – Emphasis on four skills – especially speaking skills
- Globalization
- Inbound, Increasing Visitors from Overseas
- 2020 Tokyo Olympics and Paralympics

# E-Learning Materials for Speaking Practice

- English Central
- Callan Method
- Shikibu
- SpeakBuddy
- ELST

# English Central (2017年)

 My English 教える 

英語か日本語で検索 🔍

1125

マイ単語: 142 53 0 発音: 



セリフの発音を認識することができませんでした  
もう一度録音して下さい。

...and then dragging the mouse until just after the last word in the paragraph.  
...マウスを、文章の最後の単語のすぐ後ろに来るまでドラッグします。

 見る - 内容を理解

 学ぶ - 単語を学習

 話す - スピーキング

 GoLive!  
GoLive!とは?

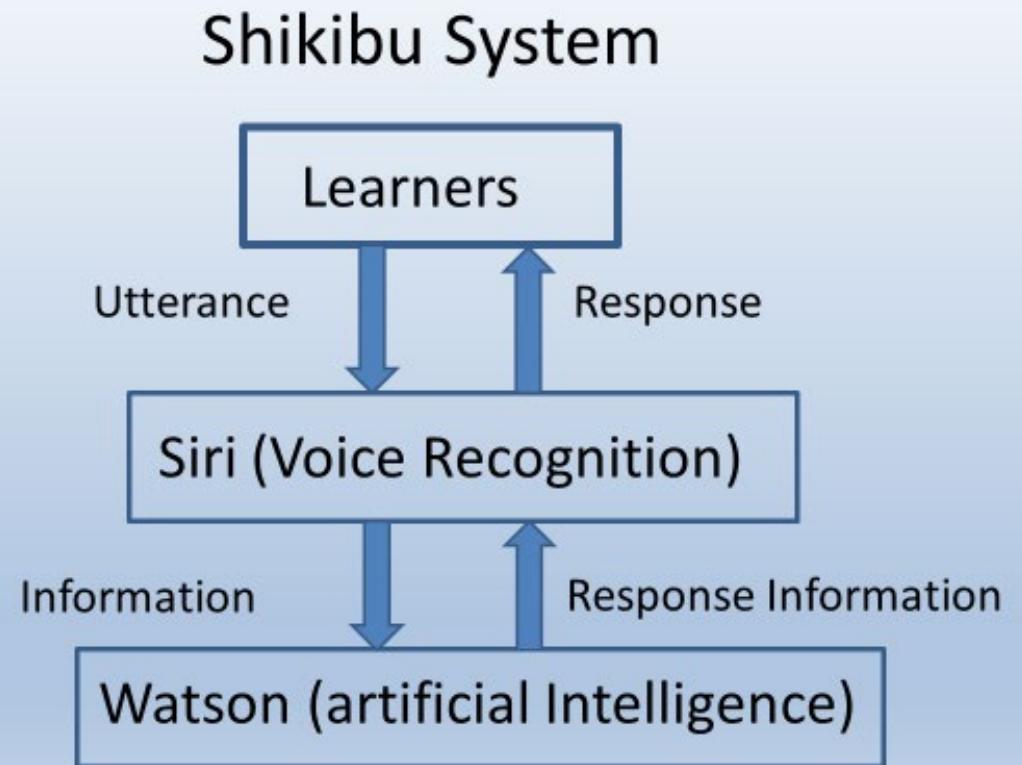
🔍 学習テキスト

# Voice Recognition + Artificial Intelligence

- Advancement in Voice Recognition
  - Siri
  - Google Assistant
  - AI Speakers
- Advancement in Artificial Intelligence
  - Watson (IBM)
  - Self-Driving
- One to One practice
- Anytime / Many times

# The First Trial — Shikibu (NTT Learning Systems)

- Developed by NTT Learning Systems in Japan
- Siri + Watson





# Study

- 26 freshmen of a university in Japan
- Computer science majors
- July to September, 2017
- For three months
- During summer break
- Self-study

# Main Menu



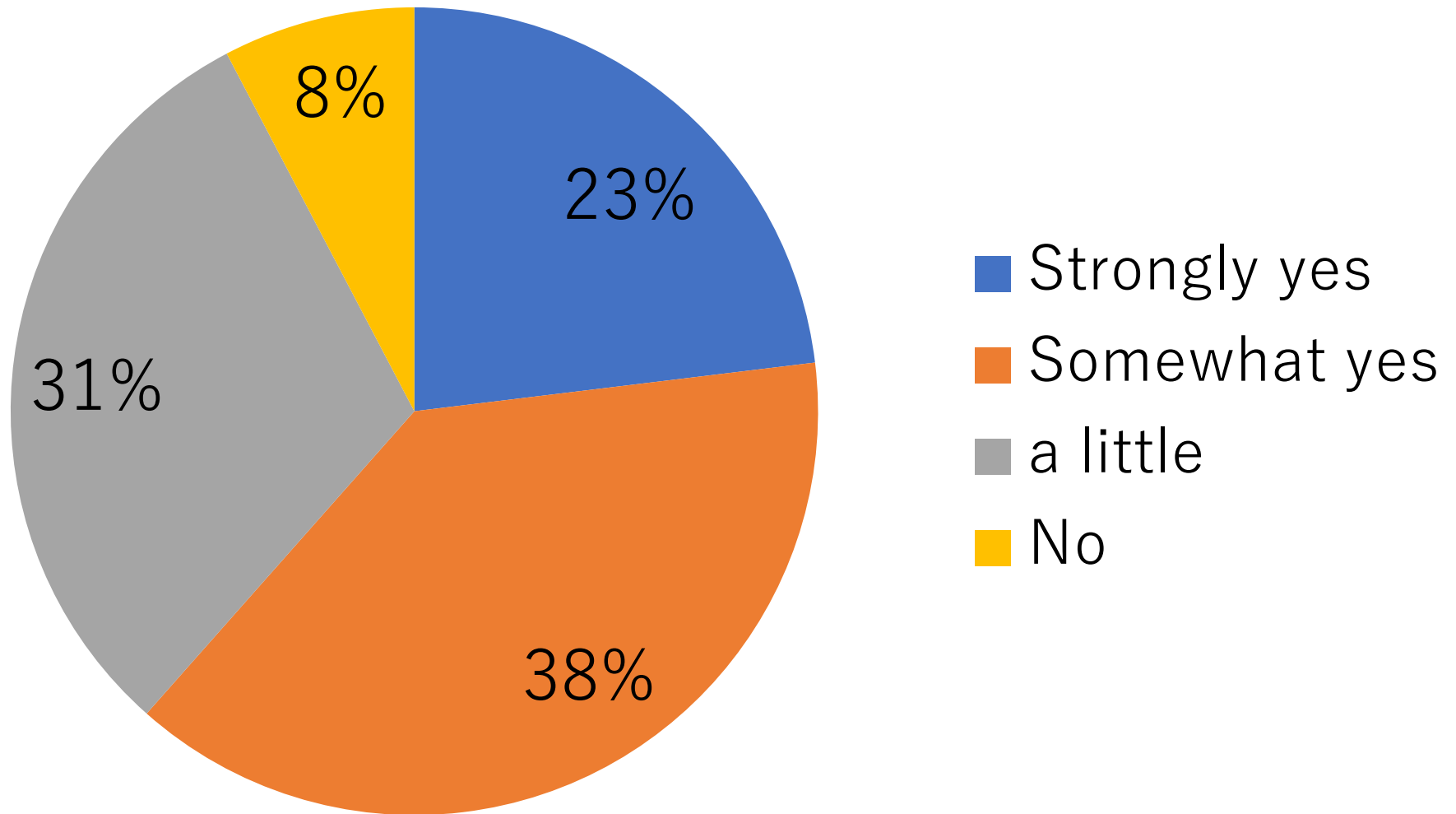
# Exercise Menu

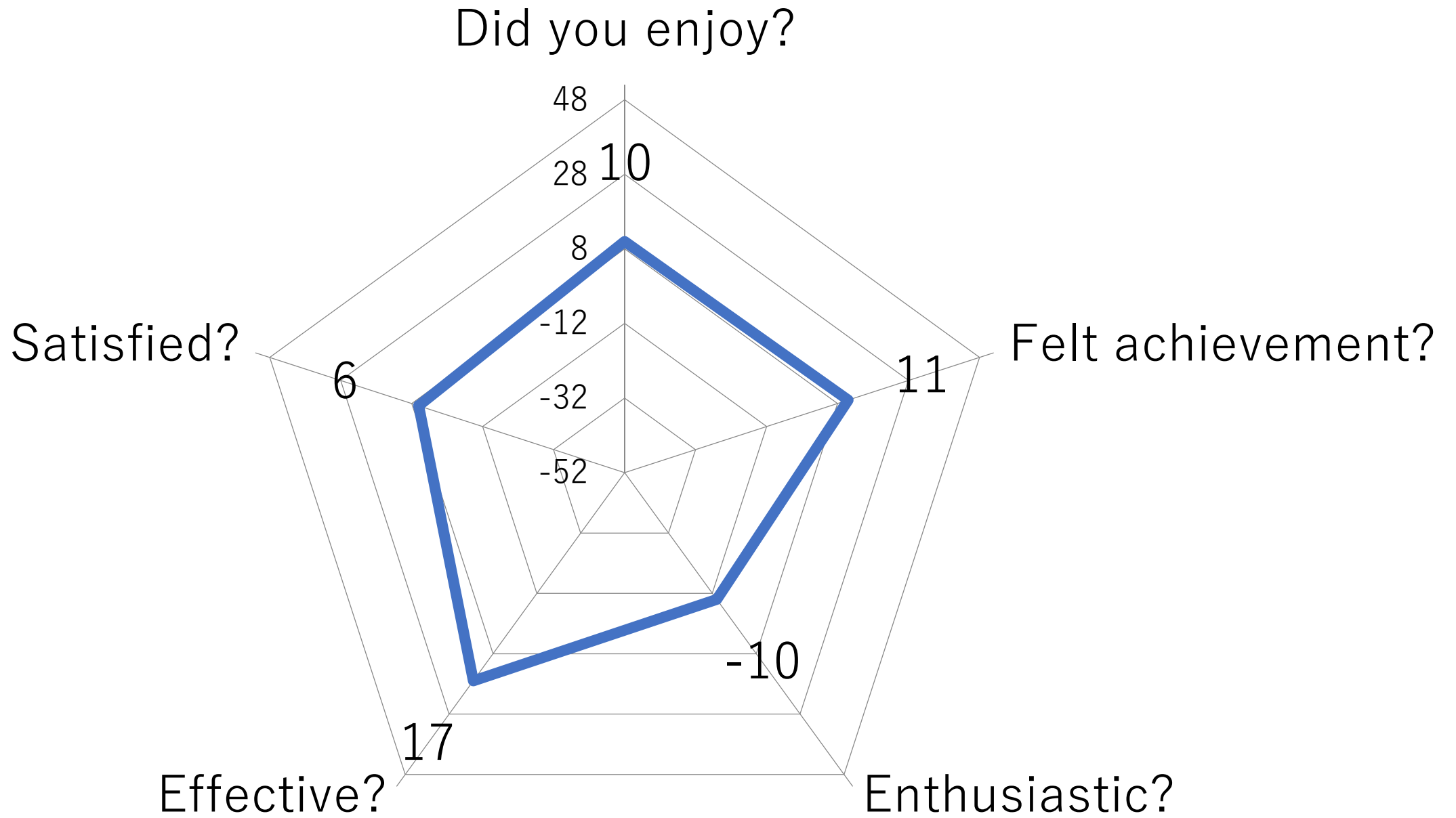


# Questionnaire

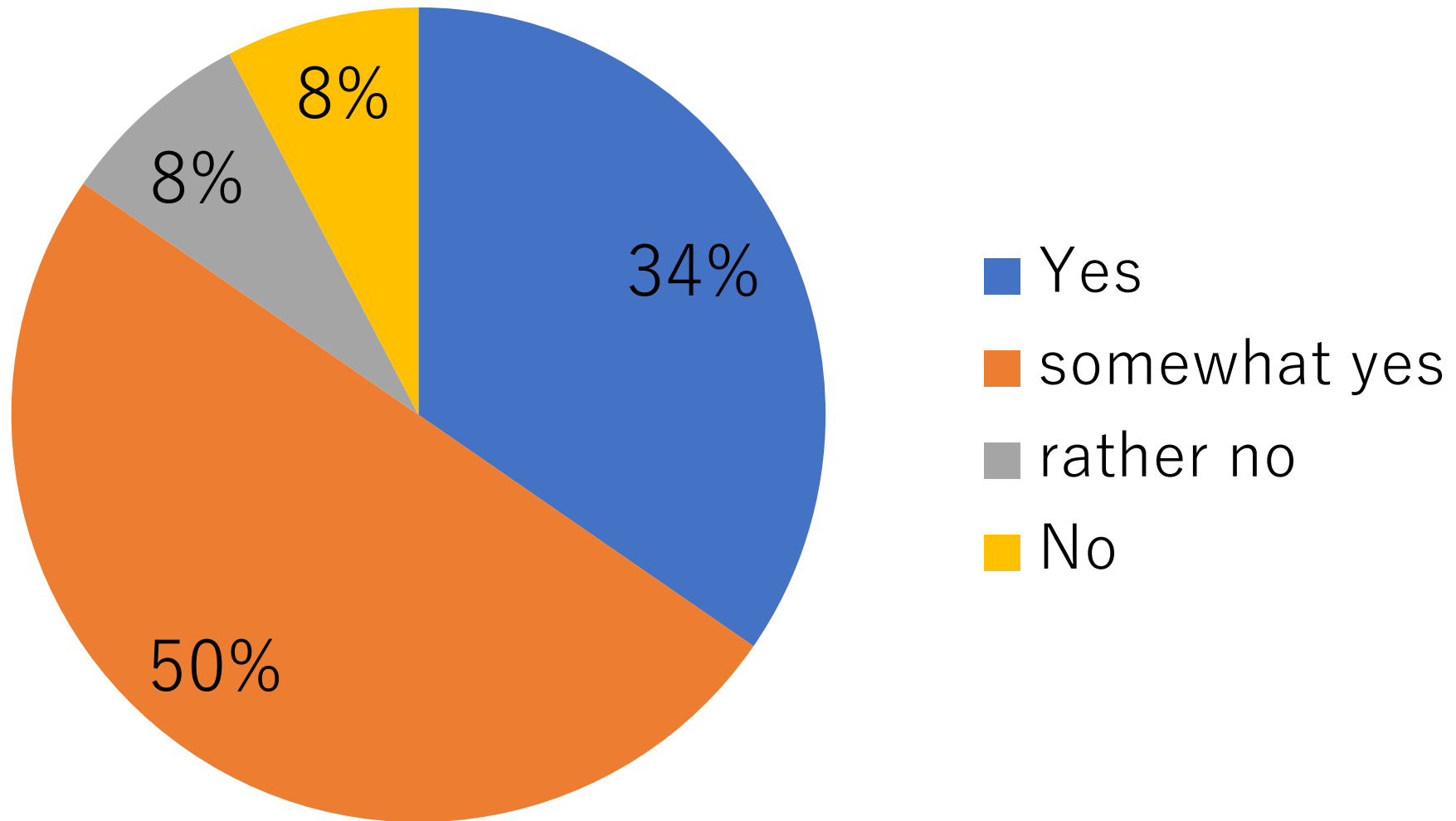
1. English learning – English ability
2. Shikibu's functions – effectiveness
3. Contents
4. Benefits of using the app
5. Future use

# Were you interested in an app with AI?

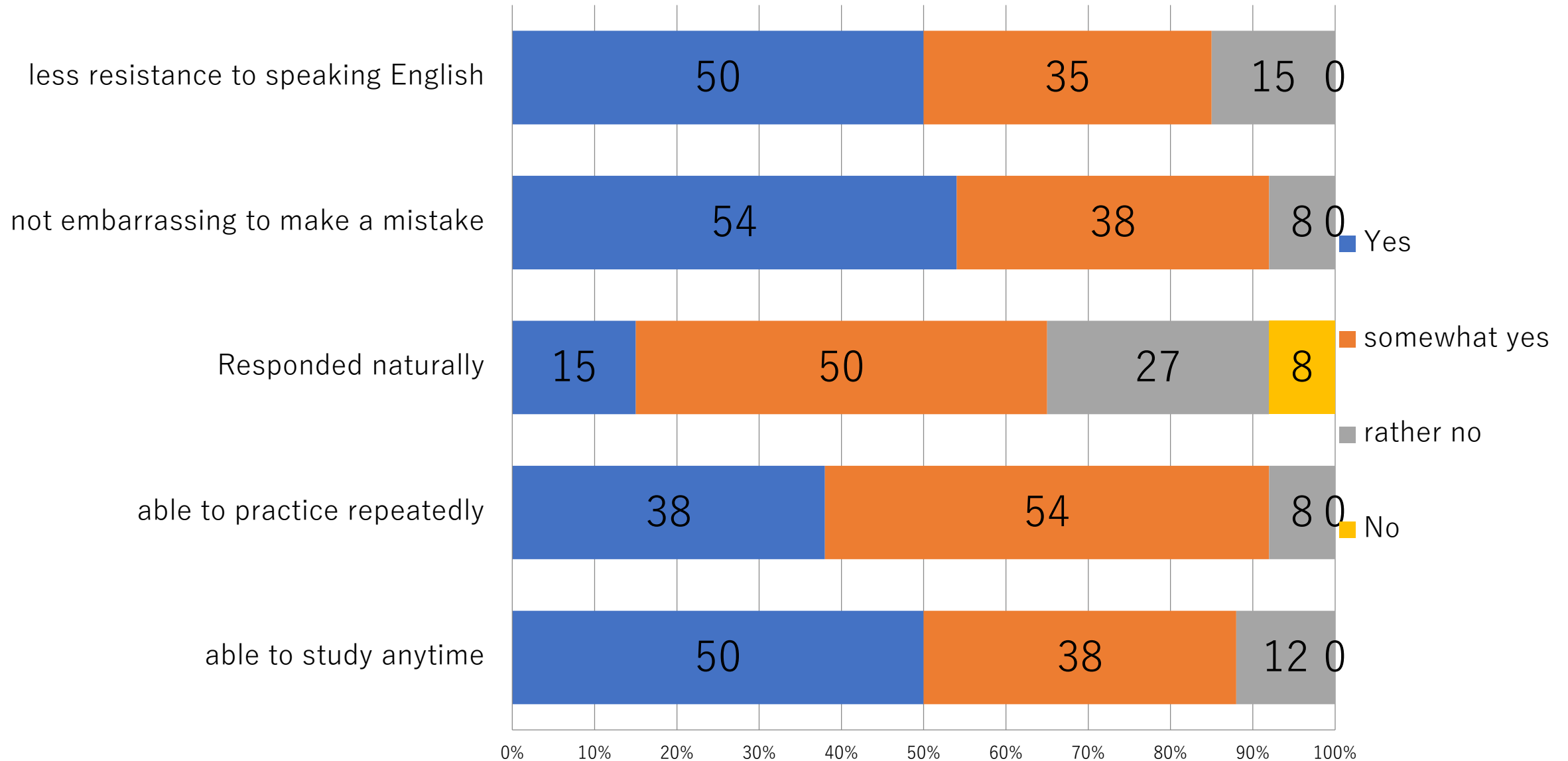




# Did you find AI conversation natural?

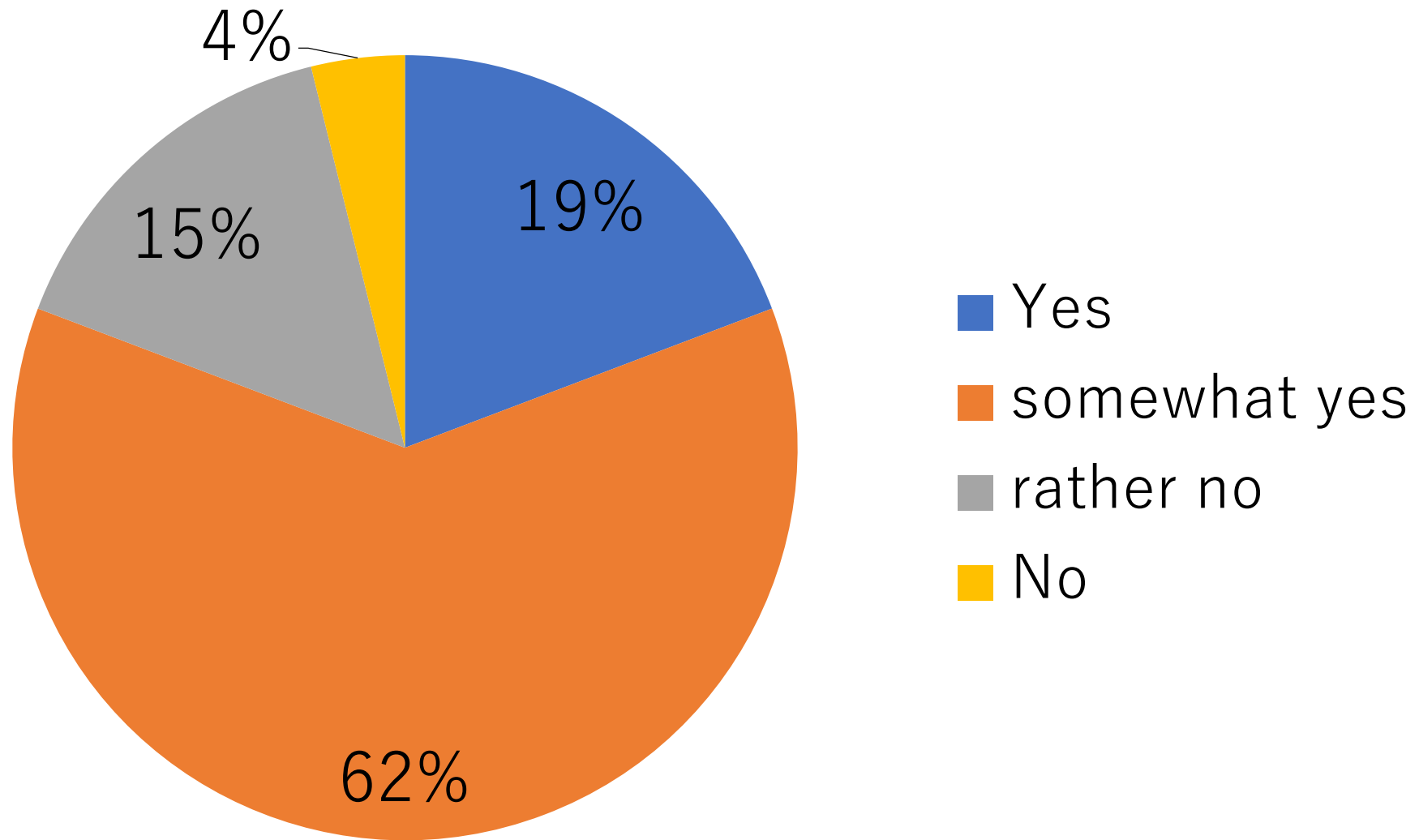


# Good features of practicing with AI





practice with AI matched your learning style?



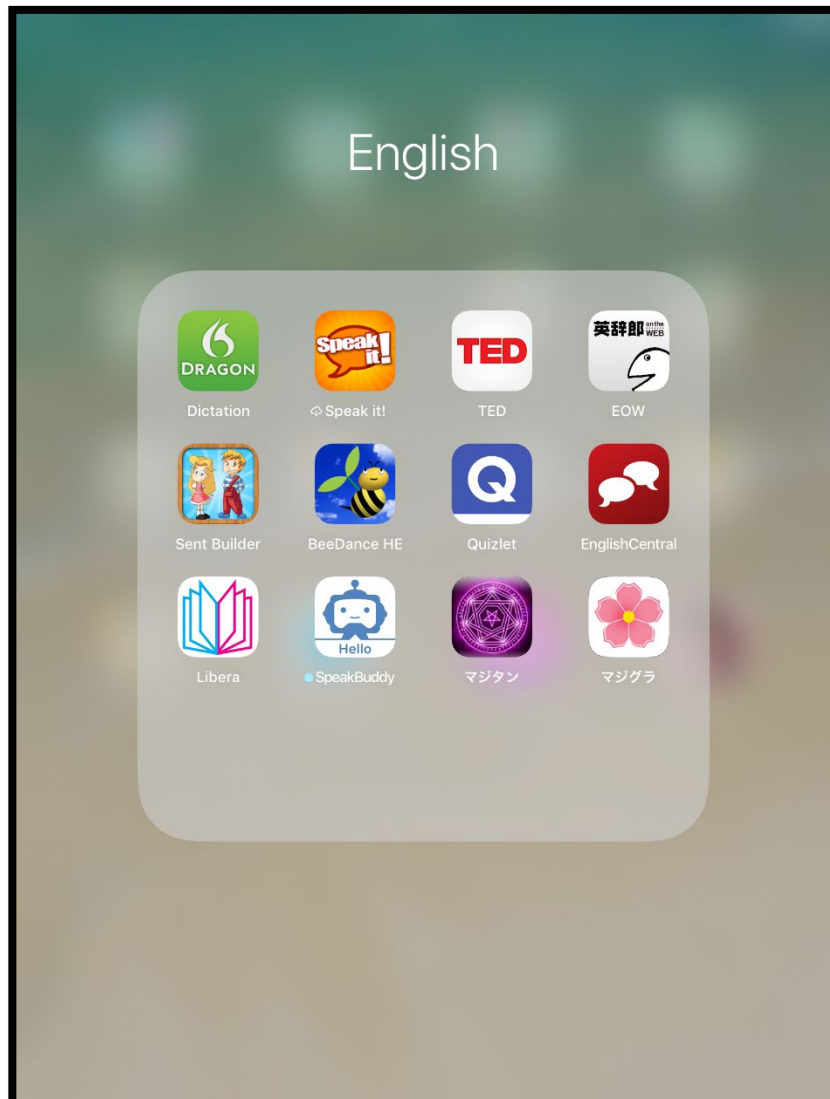
# The Second Trial — SpeakBuddy (appArray)

- Developed by appArray in Japan
- Voice Recognition (Google) and Artificial Intelligence

# Study

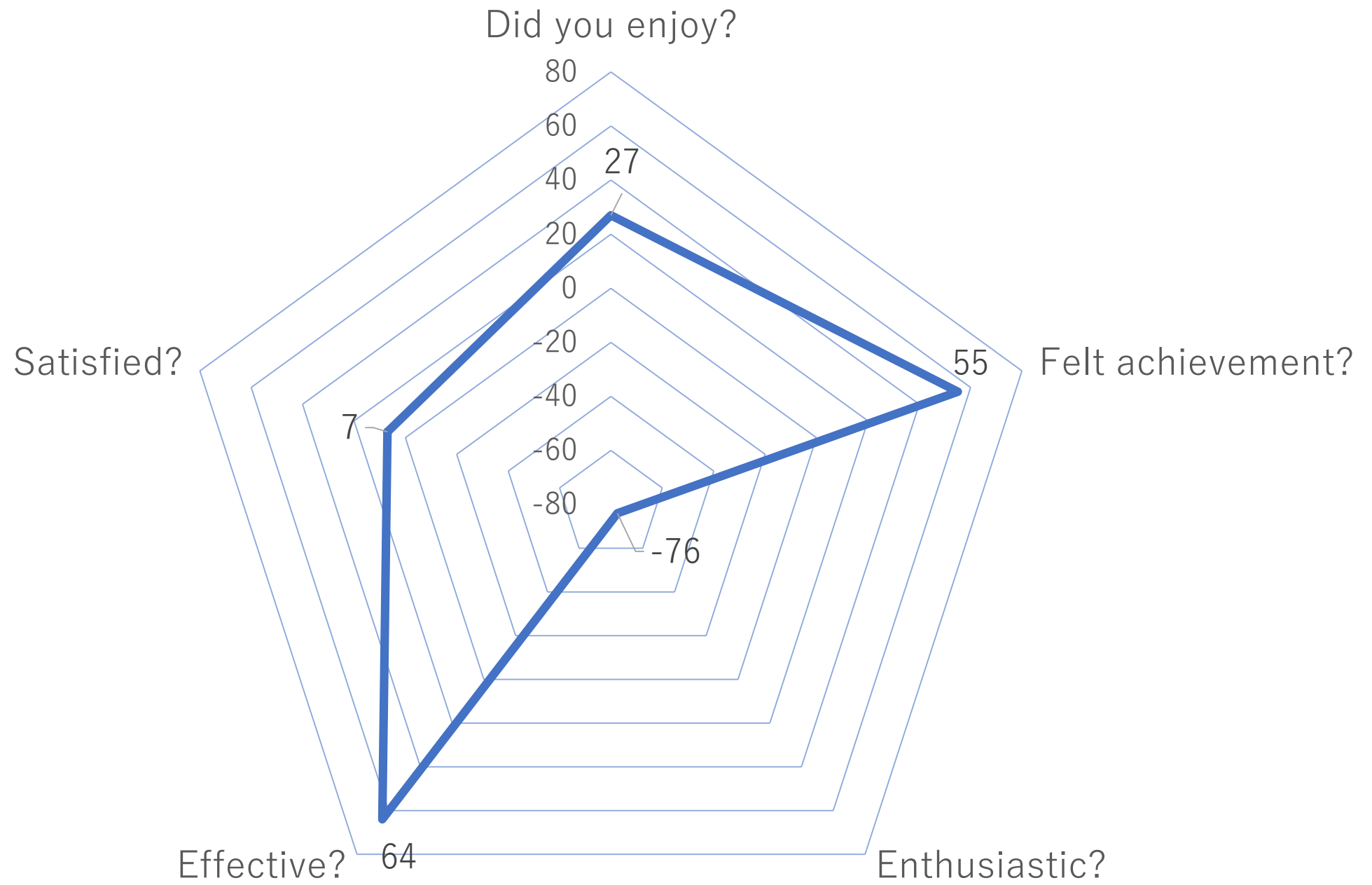
- 209 freshmen of a university in Japan
- Information and Computer science majors
- April to December 2018
- For nine months
- In class study
- Questionnaires - last week in May.

# SpeakBuddy

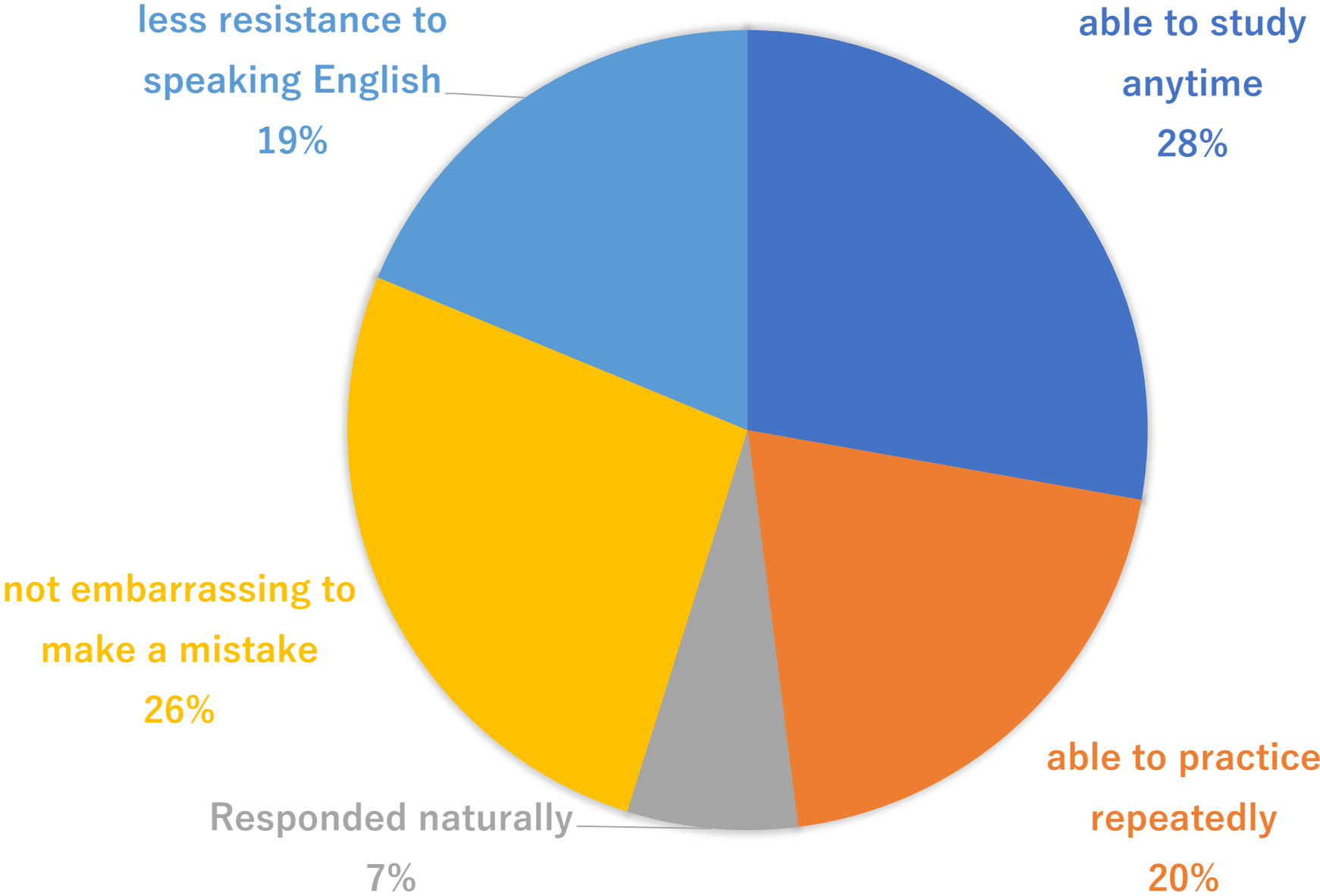


# Questionnaire

1. English learning – English ability
2. SpeakBuddy's functions – effectiveness
3. Lesson contents
4. Benefits of the English conversation app using AI
5. Future use



# GOOD FEATURES



# Summary

- Practice English utterance
  - on a one to one basis
  - low cost
  - anytime and anywhere
- Less resistance to speaking English
- Not feeling of embarrassment
  - making mistakes
  - able to repeat many times
- Need further development
  - enhancing the performance of speech recognition



# Third Trial – ELST (sinewave)

- Introducing Japan in English (ELST)
- Developed by Sinewave in Japan
- Voice Recognition and Artificial Intelligence (iFLYTEK)

# Introducing Japan in English (ELST)

- Sinewave and Seibido
- Voice Recognition
- Artificial Intelligence
- Evaluation and Scoring
- Textbook + E-Learning (with AI)
  - Reading
  - Listening
  - Speaking
  - Writing



# Geography

## I. READING

### 1 Vocabulary Study

Match each word with its definition.

- |                    |                      |                       |
|--------------------|----------------------|-----------------------|
| 1. continent ( )   | 5. latitude ( )      | 9. industrialized ( ) |
| 2. stretch ( )     | 6. approximately ( ) | 10. heritage ( )      |
| 3. archipelago ( ) | 7. consist of ( )    |                       |
| 4. longitude ( )   | 8. residential ( )   |                       |

ア. 経度	イ. 大陸	ウ. 緯度	エ. 住宅の	オ. 群島
カ. おおよそ	キ. 遺産	ク. 工業化した	ケ. へから構成される	コ. 広がる

### 2 Reading

#### Where is Japan located?

Japan is an island country in East Asia. It is located in the Pacific Ocean, and lies off the eastern coast of the Asian continent, stretching from the Sea of Okhotsk in the north to the East China Sea and the Philippine Sea in the south.

Tokyo, located almost in the middle of the archipelago, is the largest city and the capital. It lies at 140 degrees east longitude and 36 degrees north latitude. The latitude of Tokyo is about the same as that of North Carolina in the US.

The total land area of Japan is approximately 378,000 km<sup>2</sup>, which is about one twenty-fifth of that of the United States. It is about the same size as Germany and much smaller than the state of California.

Japan is an arc-shaped archipelago consisting of four main islands, Hokkaido, Honshu, Shikoku, and Kyushu. Moreover, there are more than 6,000 smaller islands. About 66 percent of the land is mountains and forests and only 5 percent is for residential use. Although Japan is known as one of the most industrialized nations, the land used for industrial purposes is a mere 0.4 percent.

The highest mountain in Japan is undoubtedly the most famous Mt. Fuji. At 3,776 meters in height, it was registered as a UNESCO world cultural heritage site in June, 2013.

### 3 Read Aloud Practice

Read the essay through your smart phone/computer and AI will evaluate your pronunciation.

## 4 Comprehension Questions

Fill in the blanks with the most appropriate words.

- Japan is an island country in \_\_\_\_\_.
- The latitude of Tokyo is about the same as that of \_\_\_\_\_ in the US.
- The total land area of Japan is about \_\_\_\_\_ of that of the United States.
- Japan is an \_\_\_\_\_ archipelago consisting of four main islands.
- The \_\_\_\_\_ mountain in Japan is Mt. Fuji.

## 5 Note Taking Exercise



Total land area: \_\_\_\_\_ km<sup>2</sup>

\_\_\_\_\_ islands

Land uses: \_\_\_\_\_ % \_\_\_\_\_

\_\_\_\_\_ % \_\_\_\_\_

\_\_\_\_\_ % \_\_\_\_\_

Mt. Fuji \_\_\_\_\_ m UNESCO \_\_\_\_\_ in \_\_\_\_\_

## 6 Grammar Exercise

Fill in the blanks with the most appropriate word. Change the form if necessary.

1. Fushimi Ward \_\_\_\_\_ the southern part of Kyoto City.
2. Matsue \_\_\_\_\_ on the coast of the Sea of Japan.
3. I spent my week \_\_\_\_\_ always.
4. Tonegawa \_\_\_\_\_ also \_\_\_\_\_ Bandotaro.
5. The historic monuments of ancient Nara \_\_\_\_\_ a World Heritage.

be known as    be located in    be registered as    the same as    lie

## II. LISTENING

### 1 Dialog 1-3

Listen to the dialogs and fill in the blanks.

- 1
- A: How can I get to Japan from Los Angeles?
- B: Well, there are <sup>1</sup>( ) ( ) ( ) from the west coast cities. Many Japanese and American airlines fly directly to Tokyo and Osaka.
- A: I would like to visit Tokyo this time.
- B: Then, there are two airports in Tokyo; Narita and Haneda.
- A: <sup>2</sup>( ) ( ) ( ) ( ) ( )?
- B: I would say Haneda but many flights go to Narita and the ones going to Haneda are limited.

- 2
- A: How can I get to Osaka from London?
- B: OK. British Airways has a direct flight from London Heathrow to Kansai International Airport.
- A: <sup>3</sup>( ) ( ) ( ) ( ) ( )?
- B: Well, it usually takes about 12 hours.
- A: Wow, it is almost half a day.
- B: Yes, but <sup>4</sup>( ) ( ) ( ) ( ) ( ) ( )? on the plane like eating meals, watching movies, or sleeping.

## 2 Vocabulary

Fill in the blanks with the most appropriate word.

1. This \_\_\_\_\_ is operated only on Tuesday, Thursday and Saturday.
2. Which way is more \_\_\_\_\_ to go from here?
3. This book is on sale for a \_\_\_\_\_ time.
4. The articles are imported \_\_\_\_\_ from England.
5. Who is the \_\_\_\_\_ contender for the gold medal?

major    route    directly    limited    convenient

## 3 Comprehension

Write T if the statement is true and F if it is false.

1. \_\_\_\_\_ Only American airlines have direct flight to Osaka.
2. \_\_\_\_\_ There are three major airports in Tokyo.
3. \_\_\_\_\_ Narita Airport is more convenient than Haneda.
4. \_\_\_\_\_ British Airways has a direct flight from London Heathrow to Kansai International Airport.
5. \_\_\_\_\_ It usually takes about 24 hours from London to Osaka.

## 4 Role Play Practice

Practice the dialogs with AI.

## III. SPEAKING

Listen to a sample speech and write your own speech using the key phrases below. AI will evaluate the content and your delivery.

Topic: My Hometown.

Key Phrases:

- My home town is (Phoenix / New York / Tokyo).
- It is known for (its delicious food / Grand Canyon / beautiful flowers).  
(English / Spanish / Japanese) is spoken there.
- The advantage of living there is that (you can feel the great nature / you can eat delicious food / you can enjoy the hot weather).
- Some people do not want to live there because (it is too cold / it is too hot / it rains a lot).

## IV. WRITING

Write an essay.

Topic: Introduce your hometown to someone living overseas.

# ELST — Introducing Japan in English (Menu)

The screenshot shows the ELST web application interface. On the left is a blue sidebar with the 'ELST' logo at the top. Below the logo are two icons: a book icon labeled '教科書' (Textbook) and a document icon labeled '宿題' (Homework). At the bottom of the sidebar is the version number 'v0.0.7'. The main content area has a light gray header with a user profile 'Makoto ...' and navigation icons. Below the header, there's a section titled '教科書コース' (Textbook Course) with a blue button labeled '変更' (Change). Under this section is a blue card for 'Introducing Japan in English' with a button labeled '前回の続き' (Continue from last time). Below this is a section titled '全ての単元' (All Units) displaying eight blue buttons labeled 'Chapter 1' through 'Chapter 8' in a 2x4 grid. Each button has its corresponding chapter number written below it.

ELST

Makoto ...

教科書コース

変更

Introducing Japan in English

前回の続き



全ての単元

Chapter 1 Chapter 2 Chapter 3 Chapter 4


Chapter 5 Chapter 6 Chapter 7 Chapter 8


v0.0.7

# Vocabulary Practice


 Vocabulary Study 



得点 : 74 点

**continent**  
[ˈkɒntənənt]   
大陸

 録音を再生

テスト

 録音

# Vocabulary Test



# Grammar Exercise

← Grammar Exercise



次の英語の空所に適切な形を書きなさい。

NO.1

Fushimi Ward

the southern part of Kyoto City. (be located in)

提出する

前回の成績



# Reading - Shadowing

 Read Aloud Practice 01  

精度 : 62 流暢度 : 84 完成度 : 61  良  可  不可  未読

得点 : 73点

Where is Japan located? Japan is an island country in East Asia. It is located in the Pacific Ocean, and lies off the eastern coast of the Asian continent, stretching from the Sea of Okhotsk in the north to the East China Sea and the Philippine Sea in the south. Tokyo, located almost in the middle of the archipelago, is the largest city and the capital. It lies at 140 degrees east longitude and 36 degrees north latitude. The latitude of Tokyo is about the same as that of North Carolina in the US. The total land area of Japan is approximately 378,000 square kilometers, which is about one twenty-fifth of that of the United States. It is about the same size as Germany and much smaller than the state of California.

 録音を再生

# Dialog Practice


← Role Play Practice 01 — ×


英 日



||| I hear that Japan is a relatively homogeneous nation. 73

70 But there are many foreign residents these days. |||







||| How many foreign people are living in Japan? 88

87 More than 2.5 million were reported to be living there in 2017. |||







||| Where are those people from? 92




# Speaking Practice

 Speaking 

**説明**

Listen to a sample speech and write your own speech using the key phrases below. AI will evaluate the content and your delivery.


 翻訳

**ヒント**

**Key Phrases:**

- My home town is (Funabashi / Osaka / Sendai)
- The population density is (7,400 / 12,000 / 1,300) per square kilometer.
- The number of people over 65 years old consists of (23 / 26 )% of the population.
- The biggest concern is (there are many elderly people who live alone / depopulation with more elderly and fewer younger people / younger people are leaving the city)

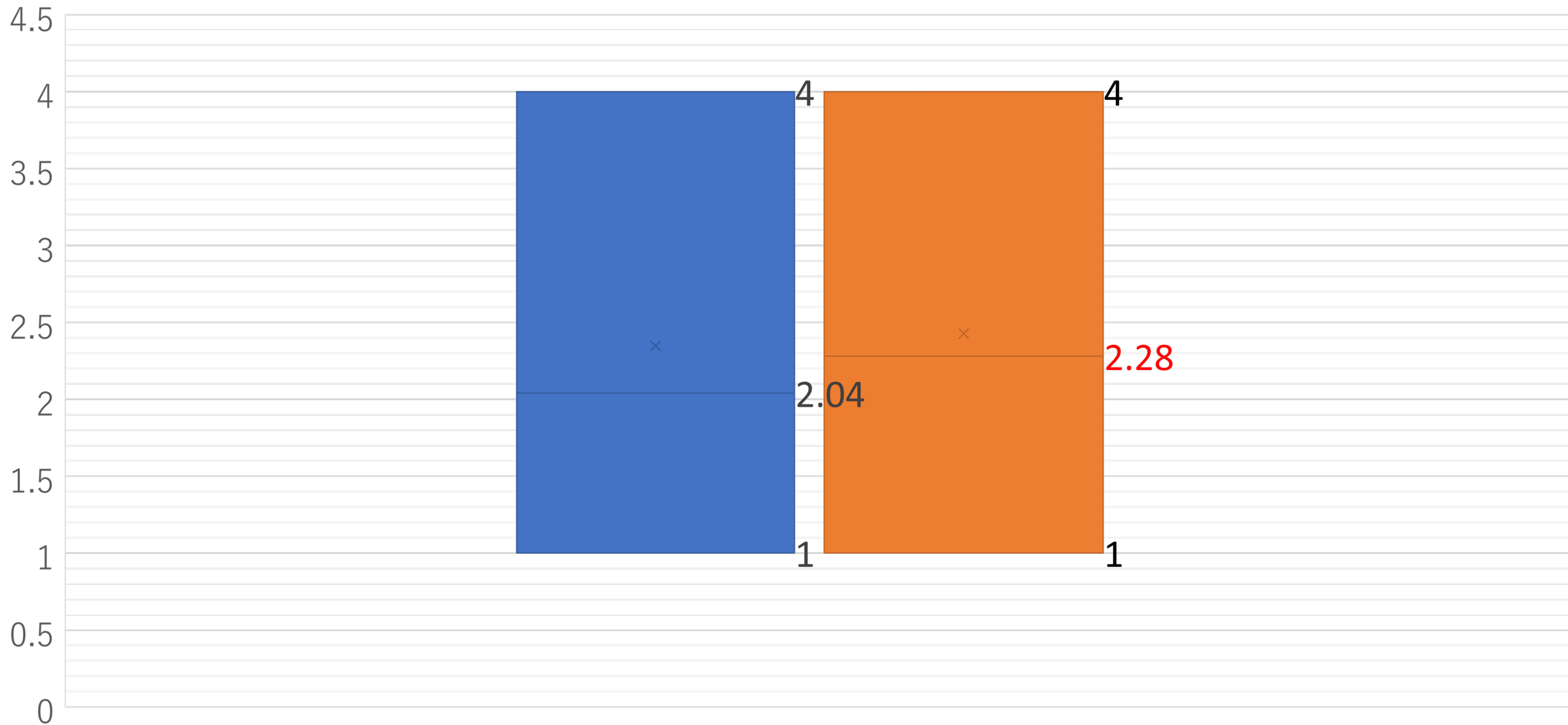
前回の成績



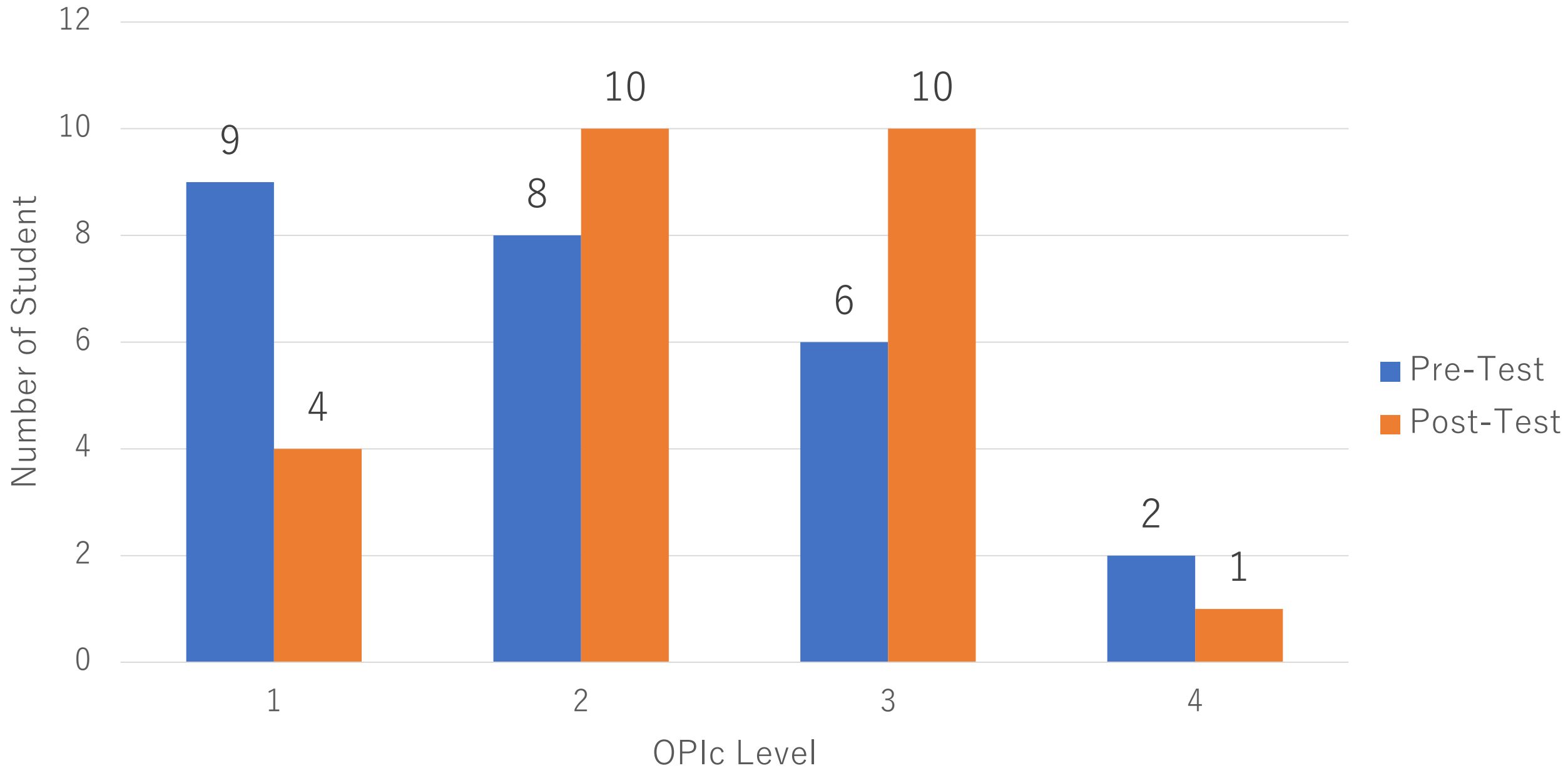
# Comparisons of Pre-Test and Post-Test Results of OPIc and TOEIC

# OPIc Pre and Post Test Score Comparison

■ Pre-test ■ Post-Test

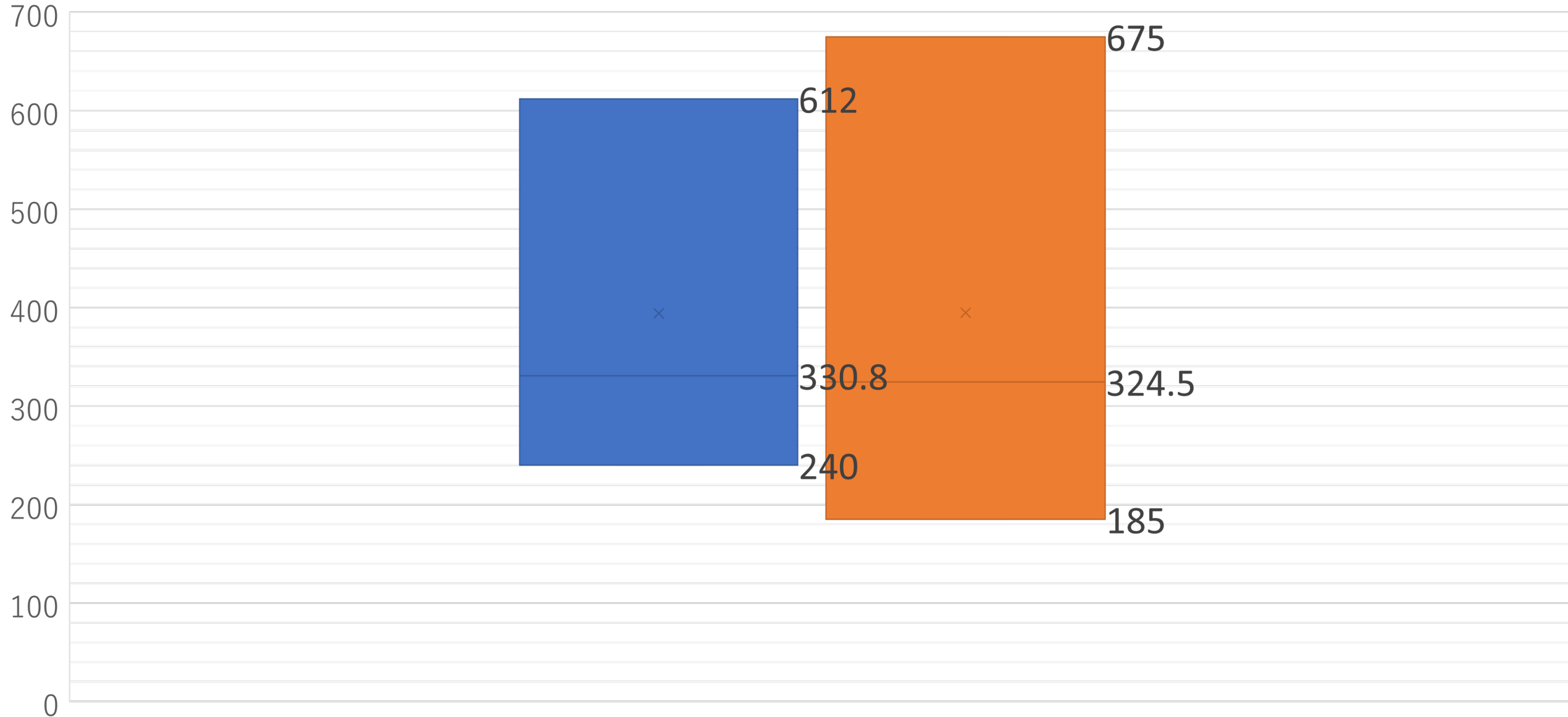


# OPIc Pre and Post Test Comparison

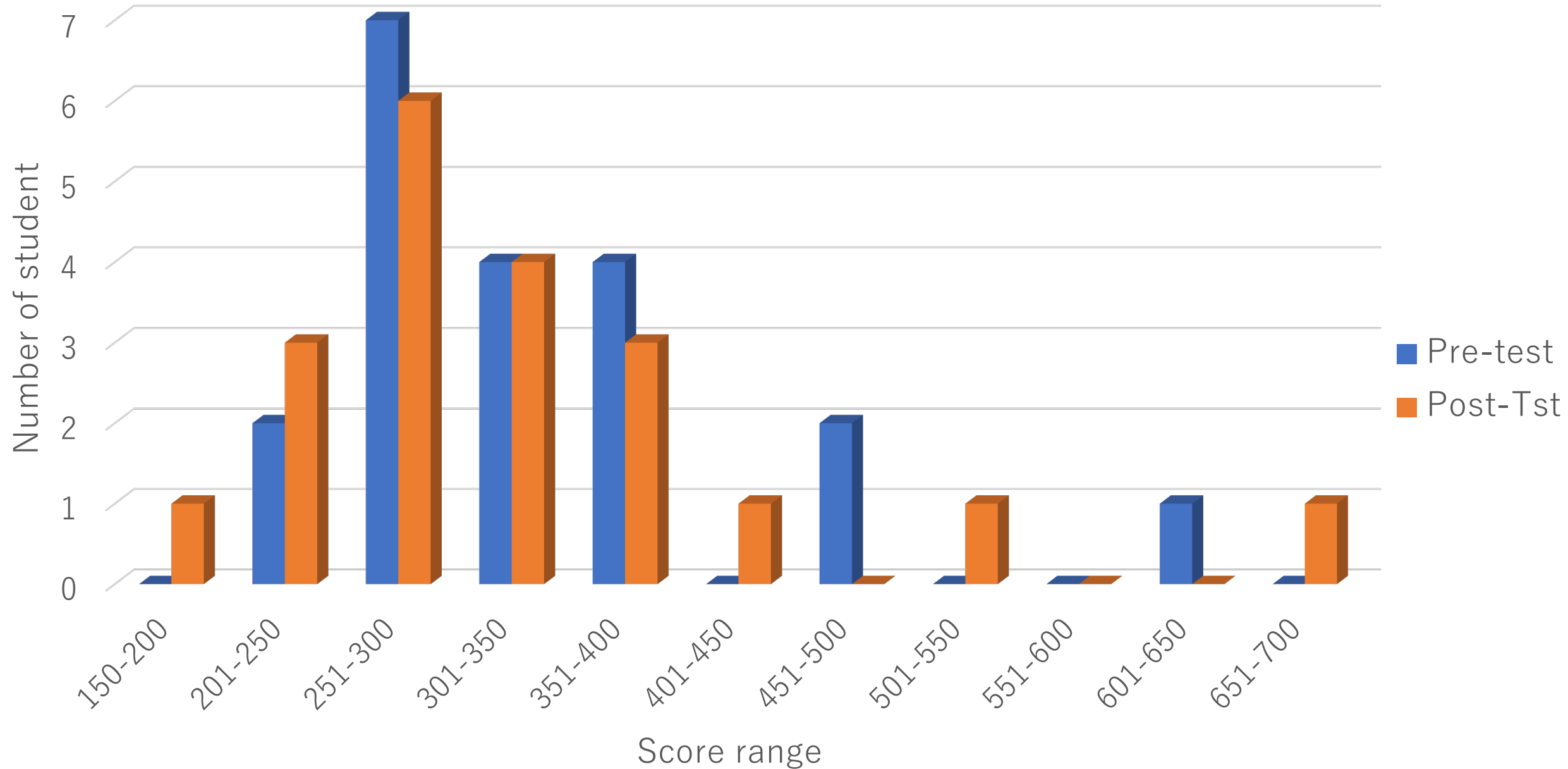


# TOEIC – Pre and Post test Results

■ Pre-test ■ Post-test



# TOEIC Pre and Post Test Comparison





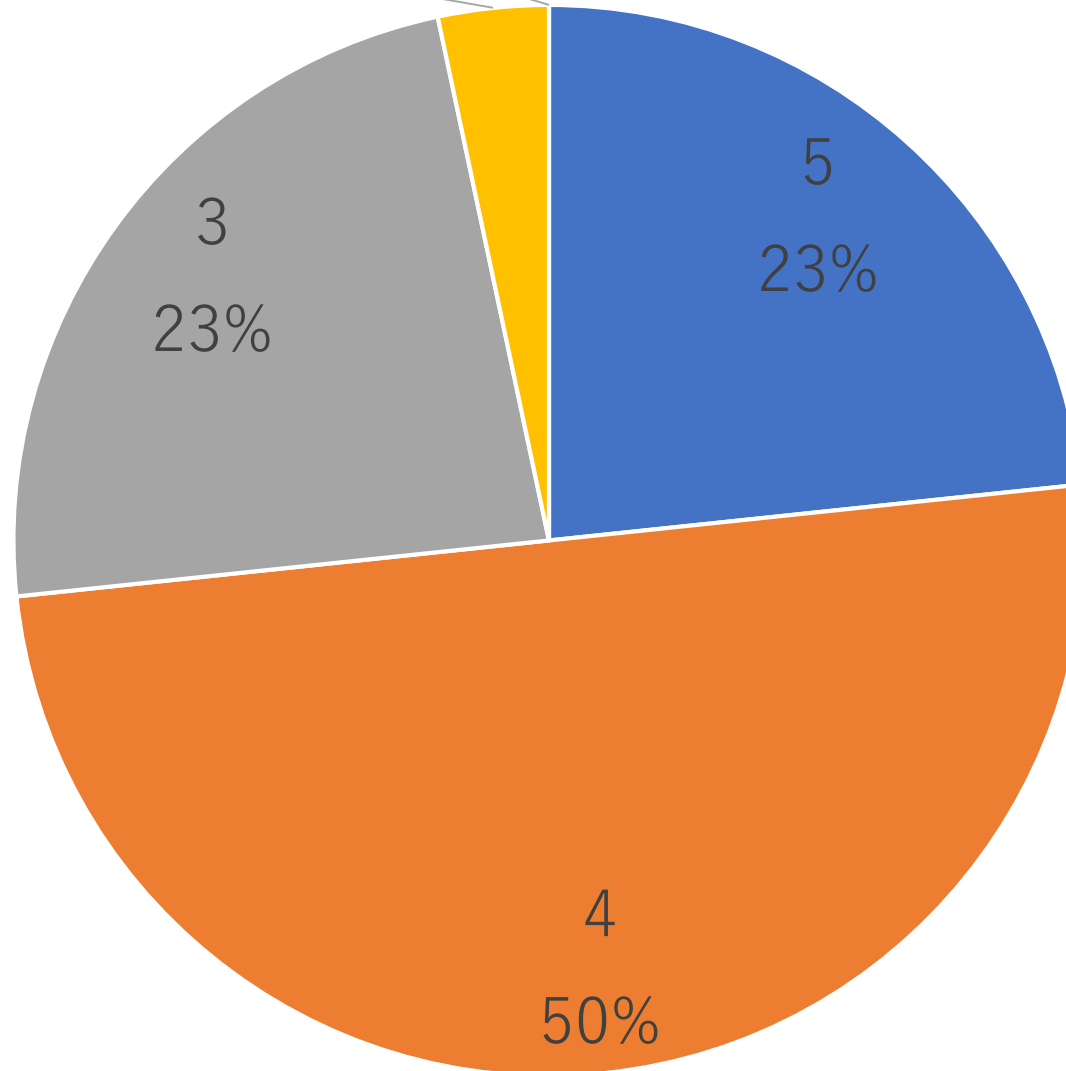
# TOEIC Score Development Rate

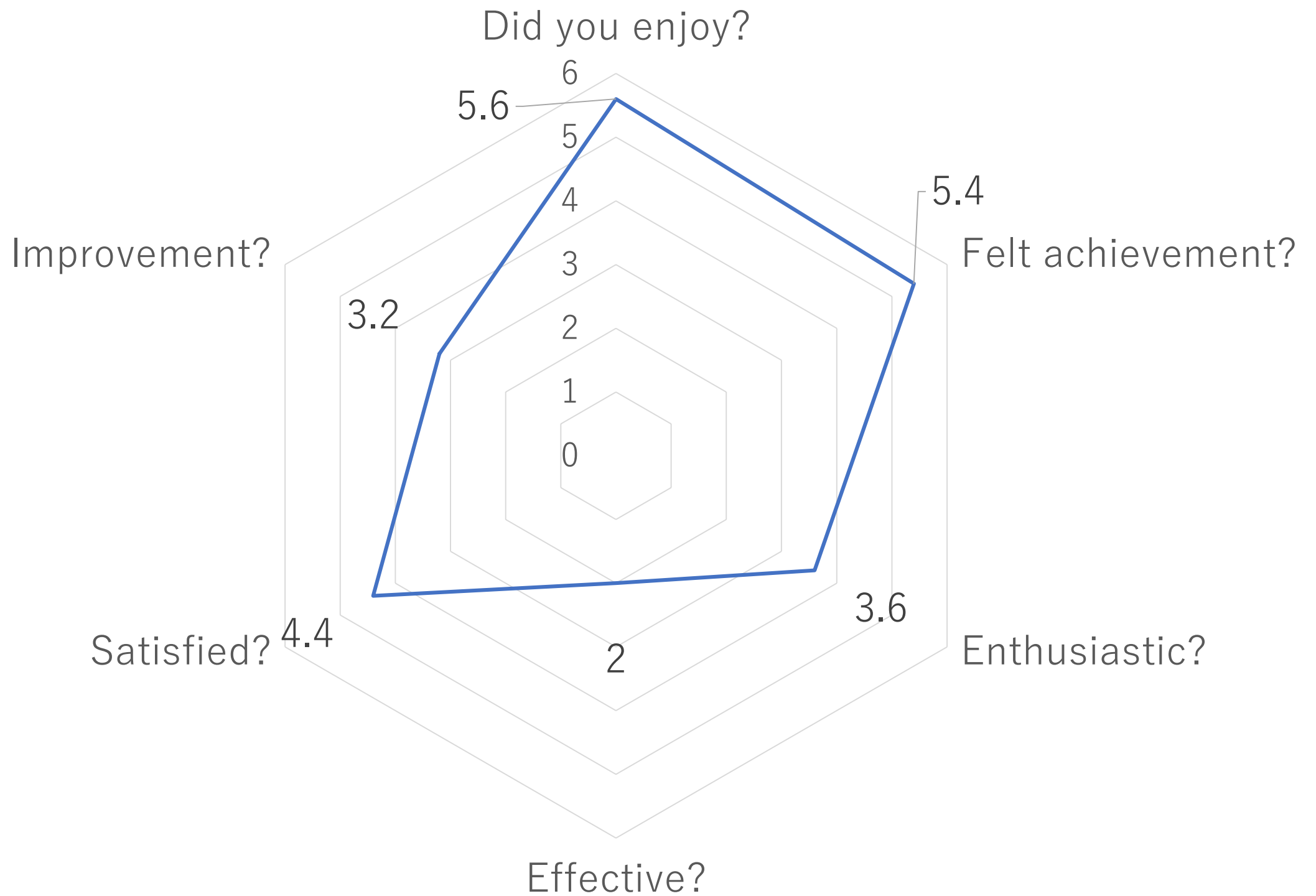


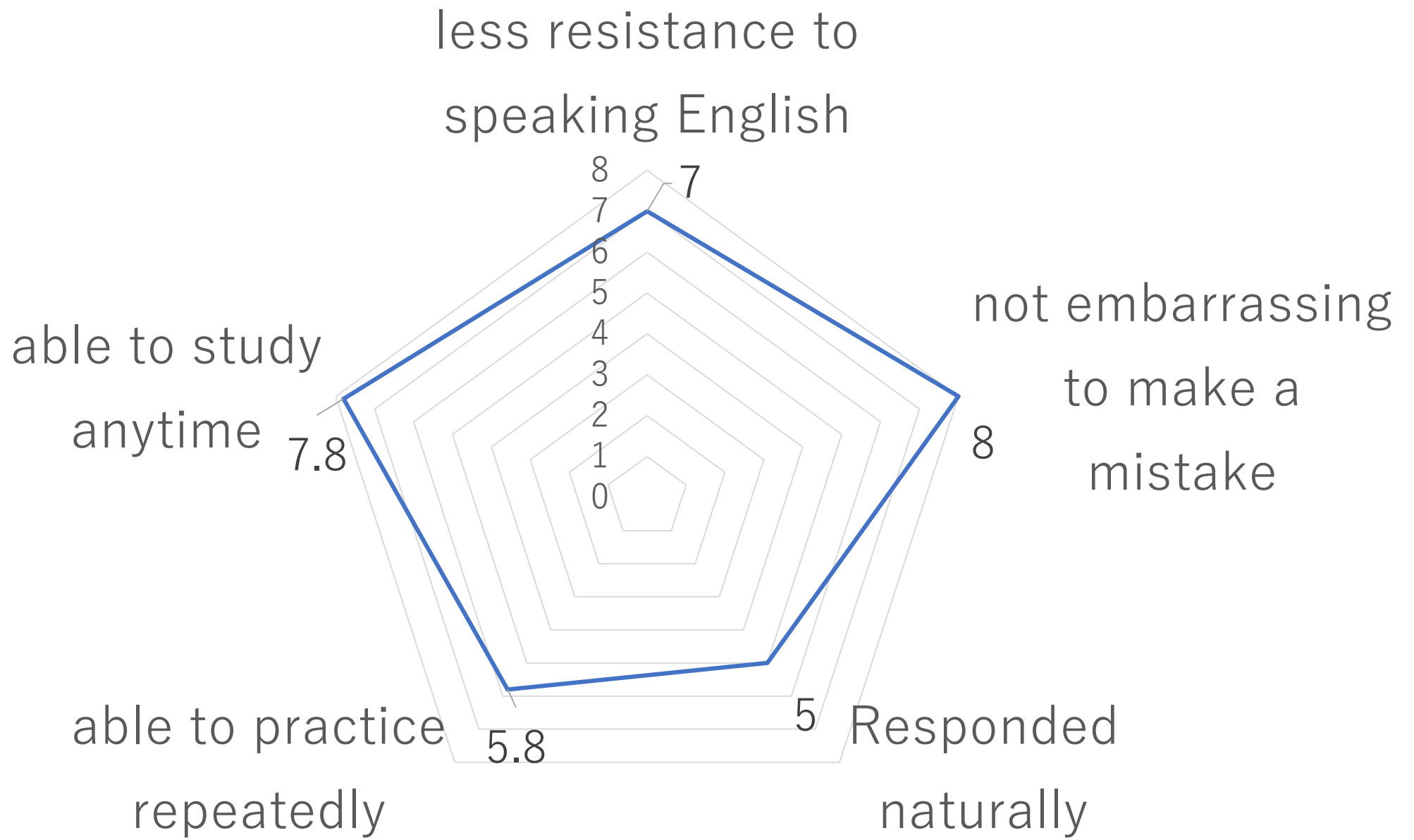
# Questionnaire

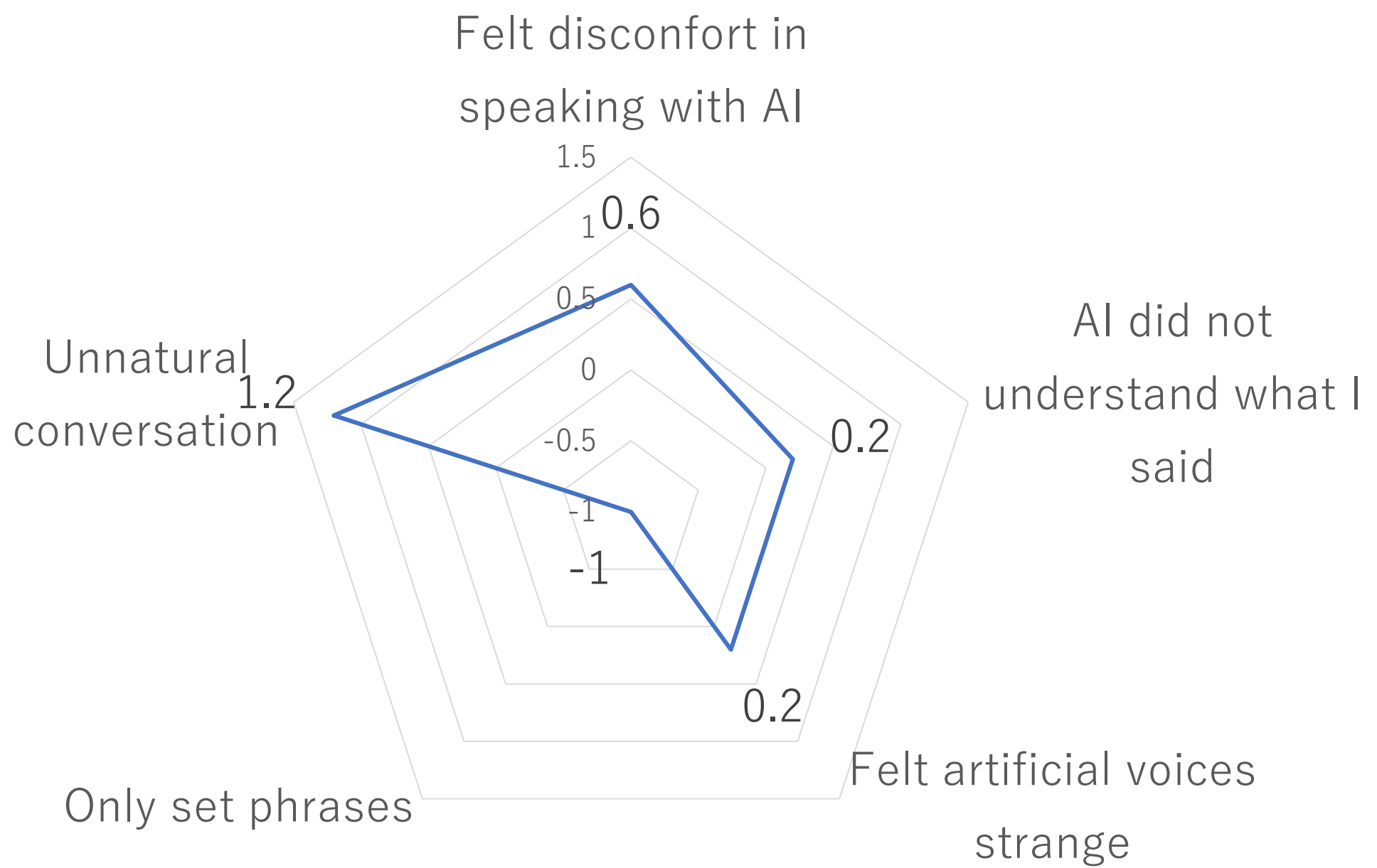
2  
4%

1 Interest in ELST  
0%

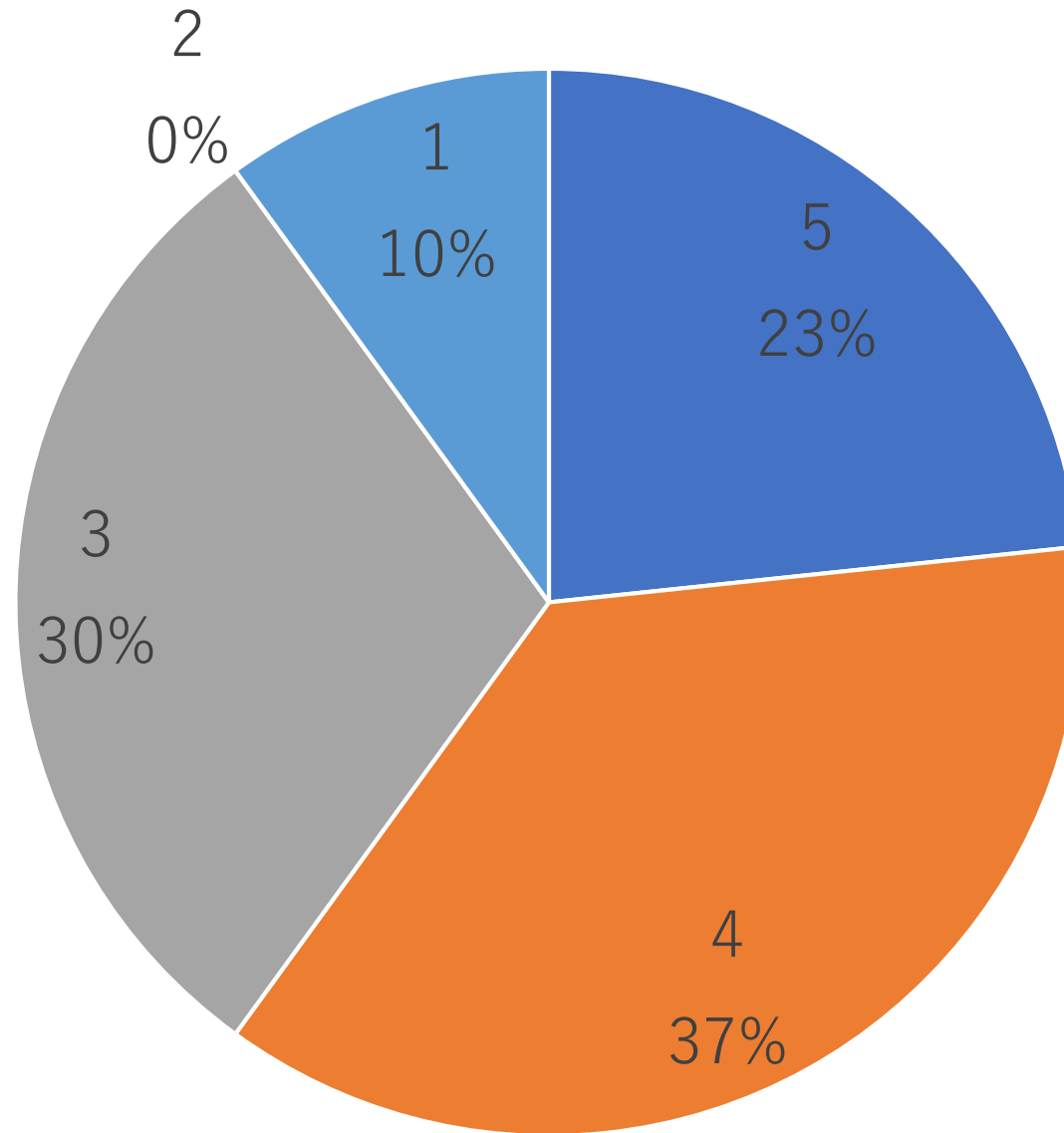




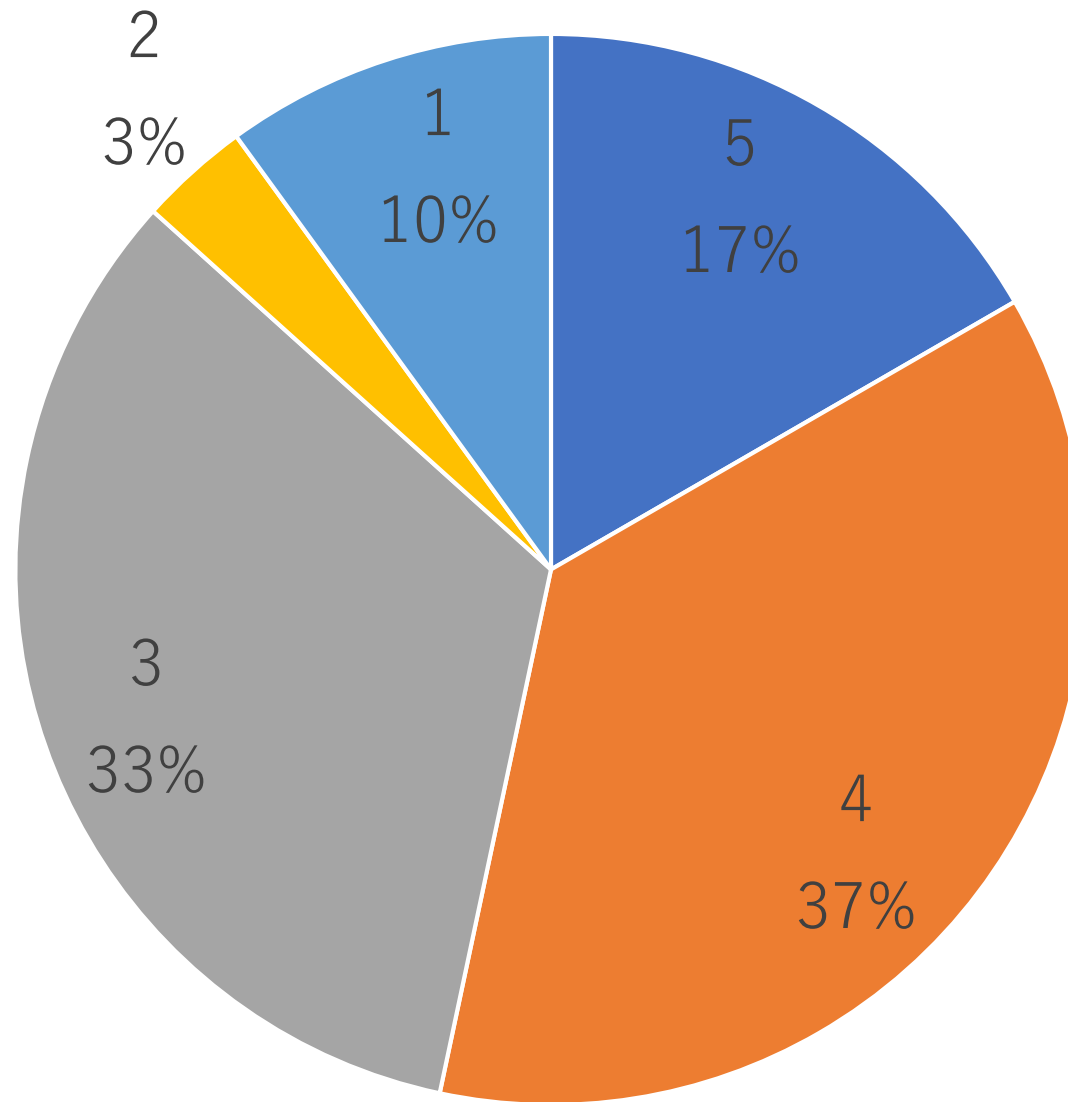




# Speaking practice with AI matches with your learning style

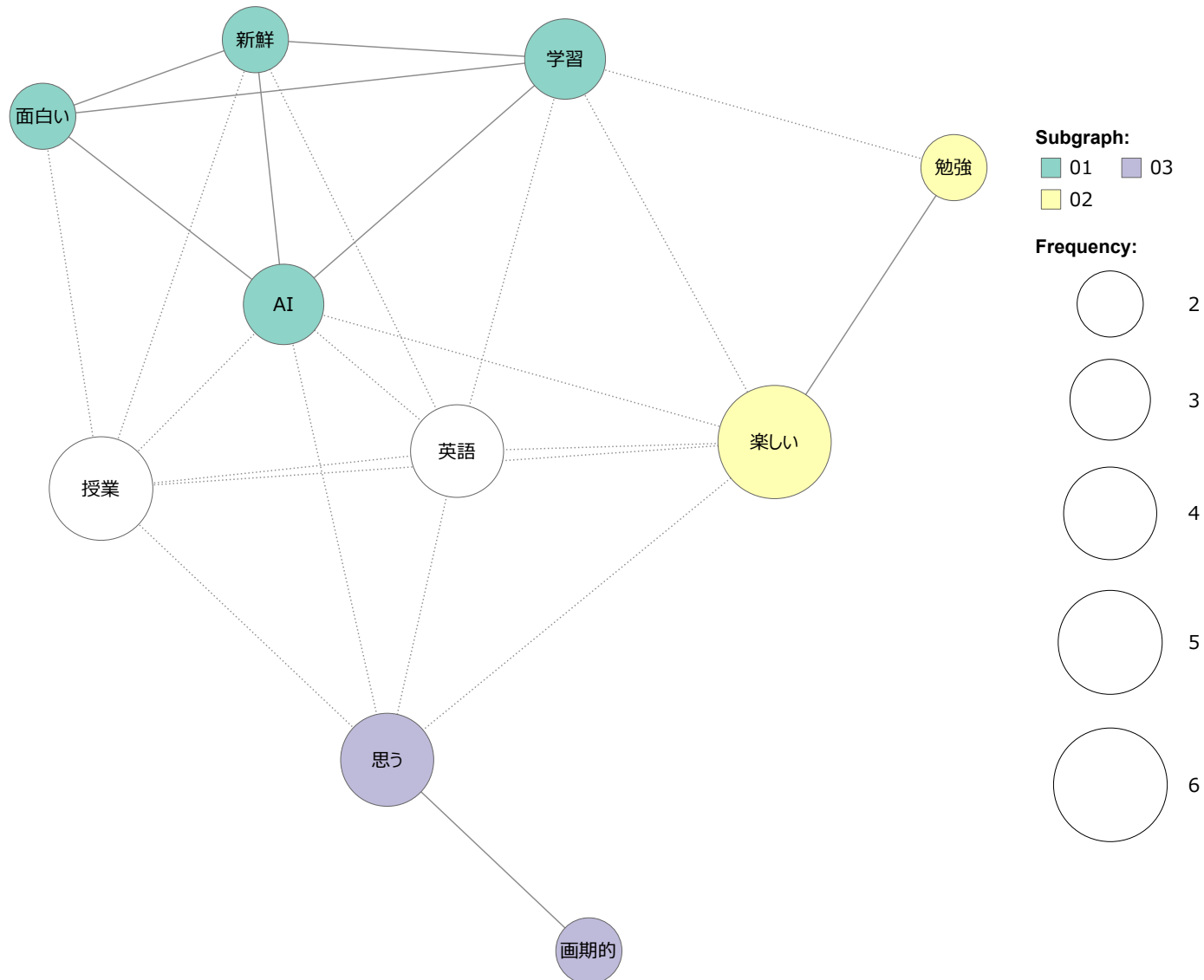


Would you like to use this kind of app privately?





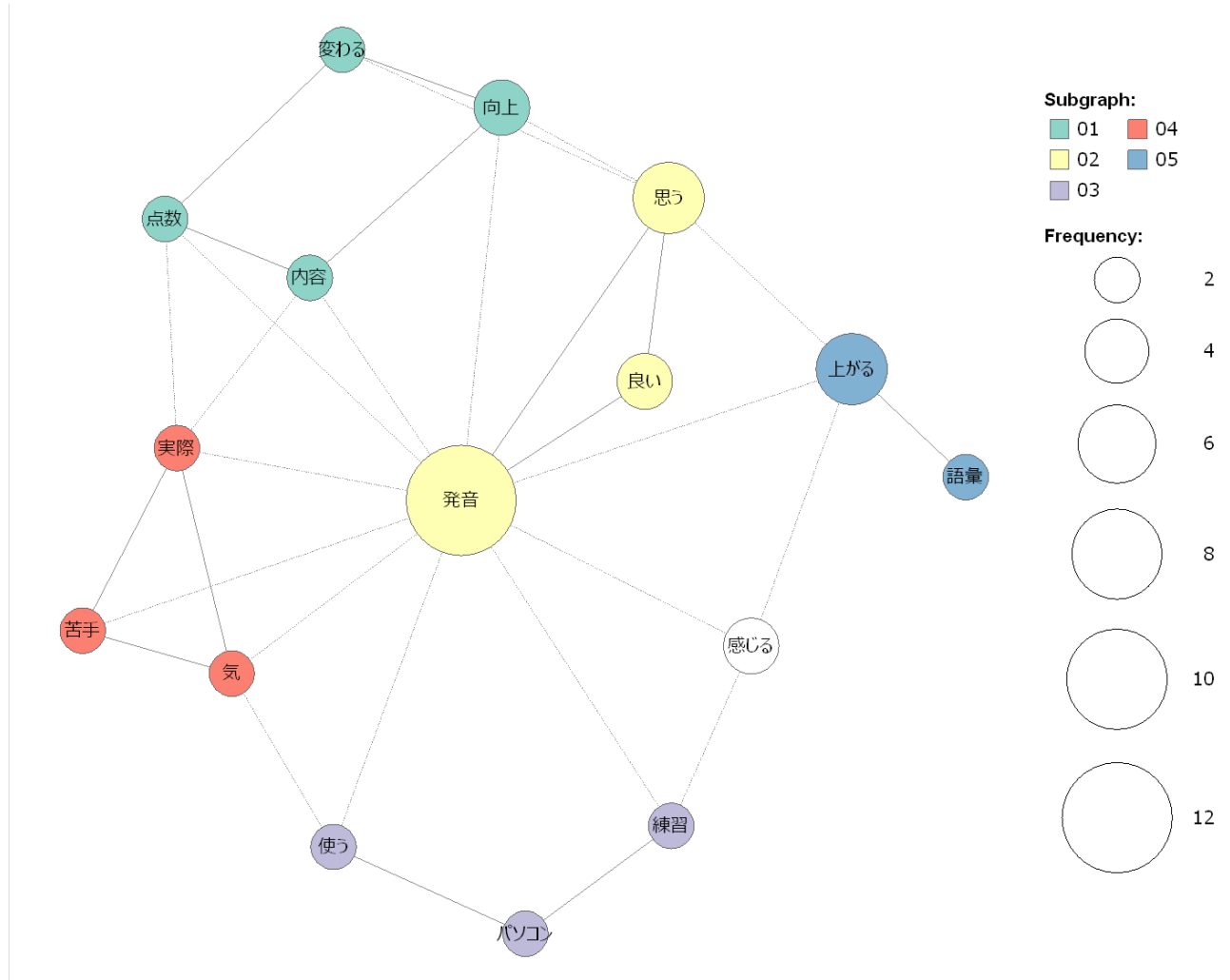
# Questionnaires-Comment 1



English-fun-study

AI-interesting-study-fresh

# Questionnaire – Comment 2



Pronunciation  
Improvement  
Content  
Good  
Score  
Change  
Good  
Go up

# Summary

- The results seem positive and effective.
- The students had fun, liked, and enjoyed studying with AI.
- It is a fresh experience for them.
- They felt improvement.
- Their abilities and OPIc scores went up.

# Future Development

## Free Conversation with AI

### Using Multiple Choice Chat Bot

6 turns  $\times$  3 multiple choice = 27 patterns

# An Example of Multiple-Choice Chatbot

AI	Student	AI	Student			
			4.1.1. I live alone.			
			2.1. I'm going home.	3.1. Who is waiting?	4.1.2. My mom.	
						4.1.3. My dog.
						4.2.1.I study science.
			1. Where are you going?	2.2. I'm going to school.	3.2. What do you study?	4.2.2.I study economics.
			4.2.3.I study math.			
						4.3.1. I want a jacket.
						2.3. I'm going shopping.
						4.3.3.I am not sure yet.