

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

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 - Several Previous Trials
- The First Trial with AI
 - Shikibu
- The Second Trial with AI
 - Speakbuddy
- The Third Trial with AI– Current study
 - ELST- Introducing japan in English
- 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)

The screenshot displays the English Central website interface. At the top, there is a navigation bar with the logo "EnglishCentral", the text "My English 教える", and the URL "www.Bandicam.com". A search bar on the right contains the text "英語が日本語で検索". Below the navigation bar, there is a user profile icon and a globe icon. A sidebar on the left shows a star icon with the number "1125". The main content area features a video player with a video titled "Molecular Animation" and a Japanese subtitle: "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。". The video player shows a scene with a microphone icon and a play button. Below the video player, there is a text overlay: "...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。". The sidebar on the right contains a menu with four items: "見る - 内容を理解" (Watch - Understand content), "学ぶ - 単語を学習" (Learn - Learn words), "話す - スピーキング" (Speak - Speaking), and "GoLive!". Below the menu, there is a search bar with the text "学習テキスト".

EnglishCentral My English 教える www.Bandicam.com 英語が日本語で検索

1125

マイ単語: 142 53 0 発音: [a] [æ] [ə] [ɔ]

Chrome file Edit View History Bookmarks Window Help

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?

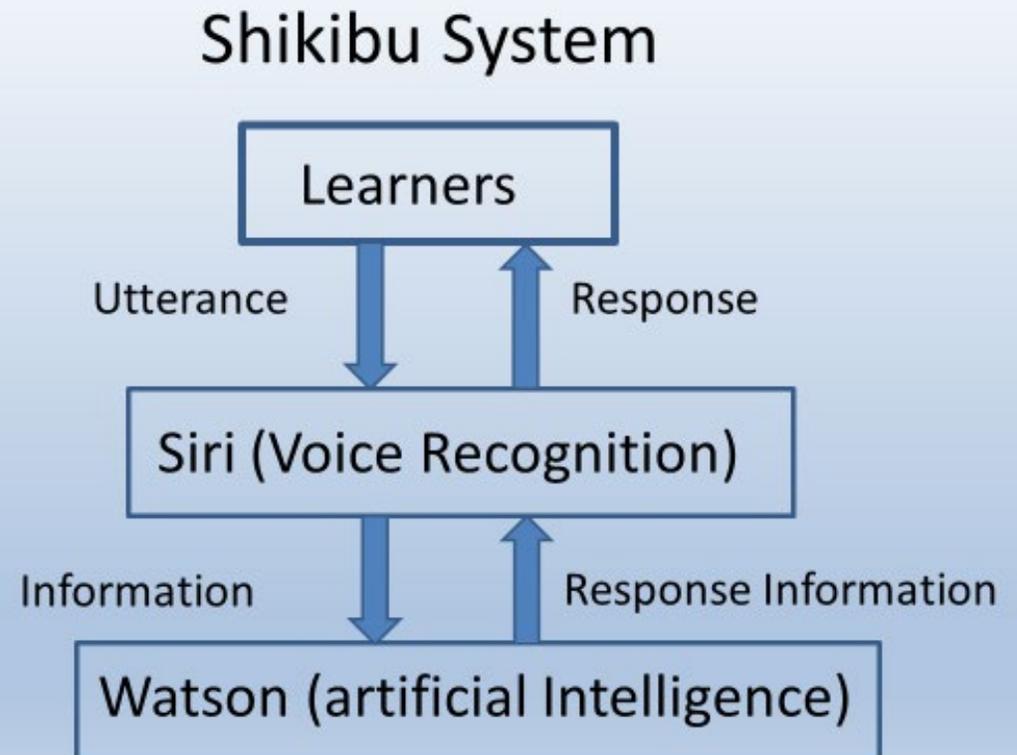
学習テキスト

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



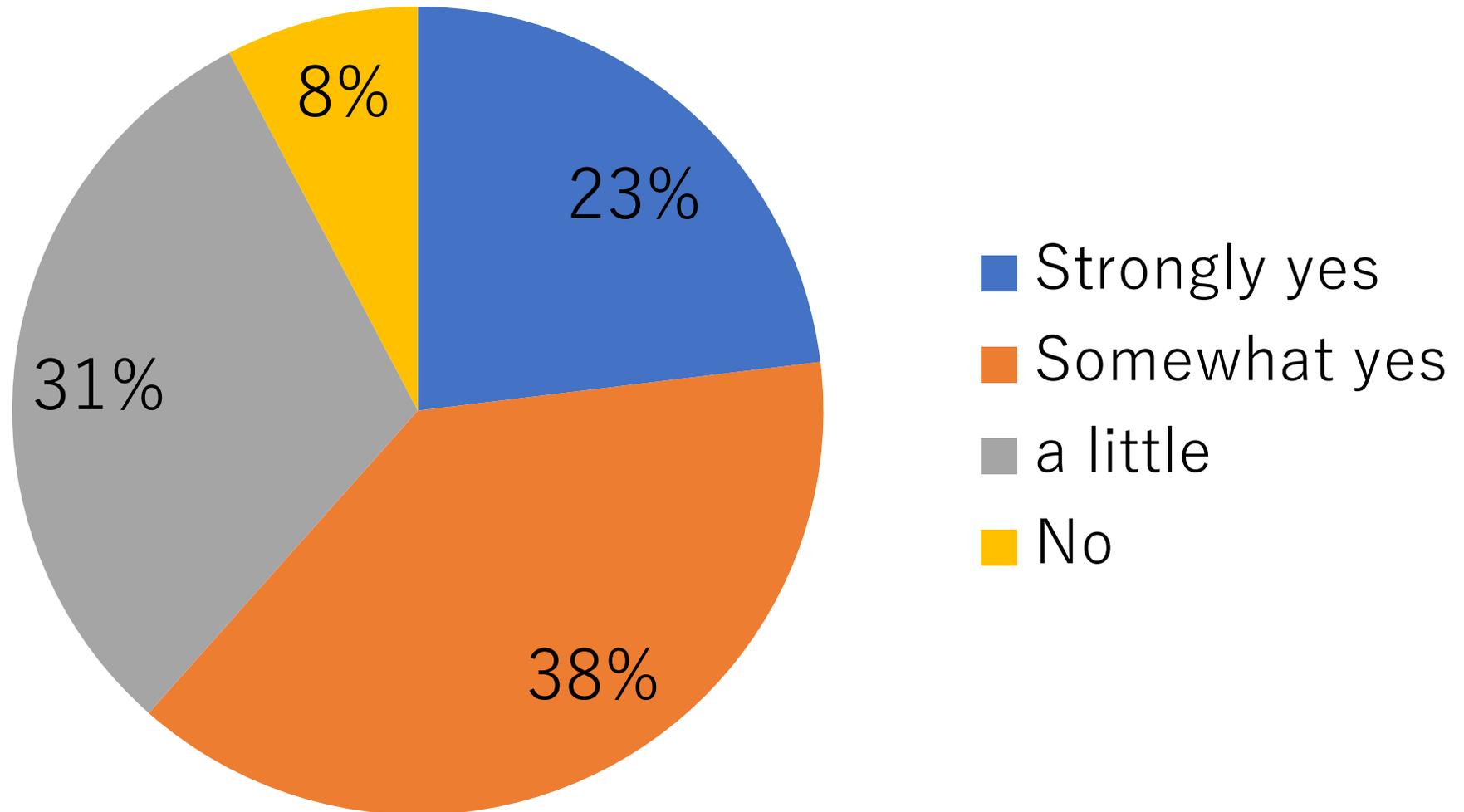
Exercise Menu



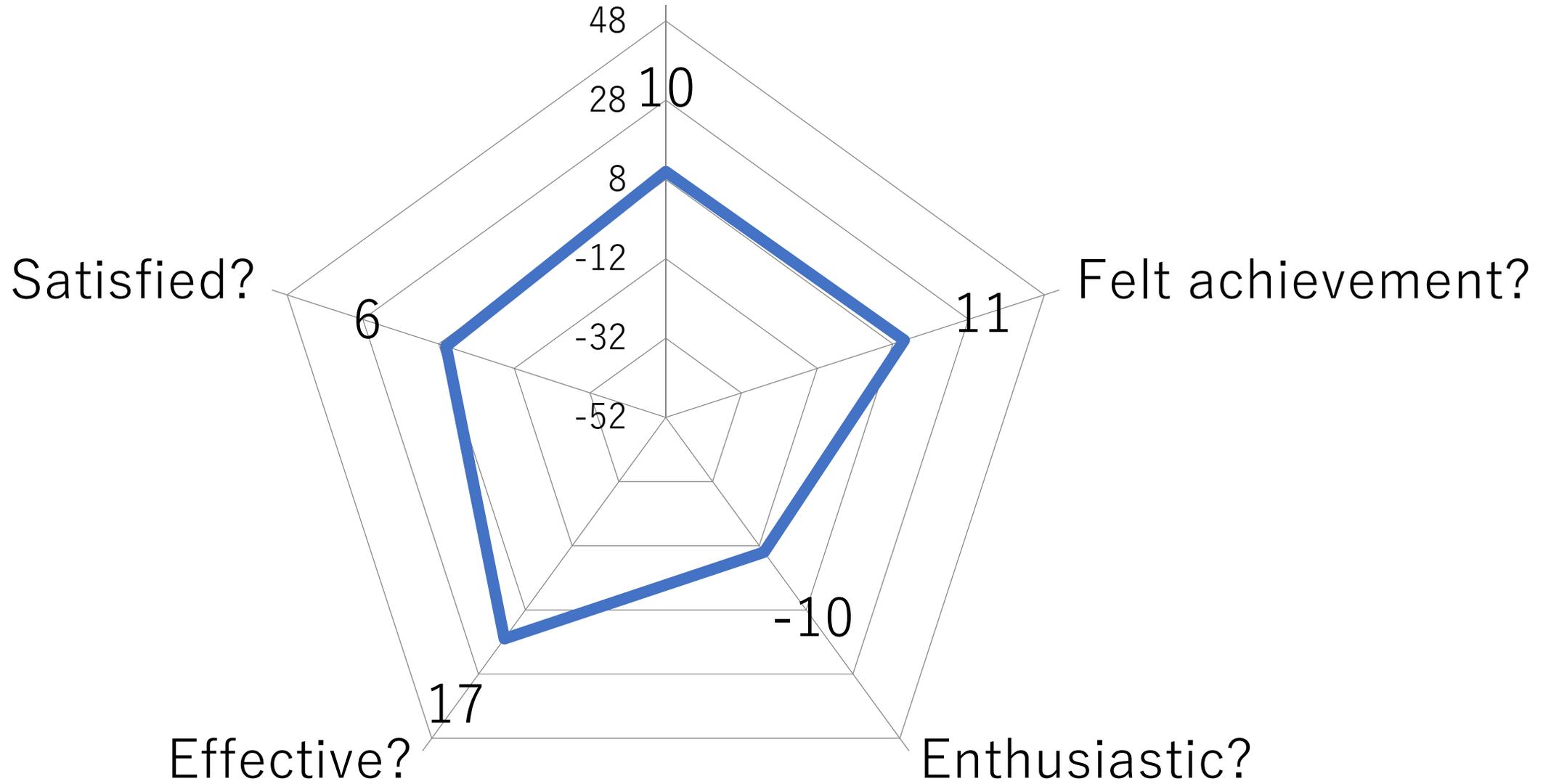
Questionnaire

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

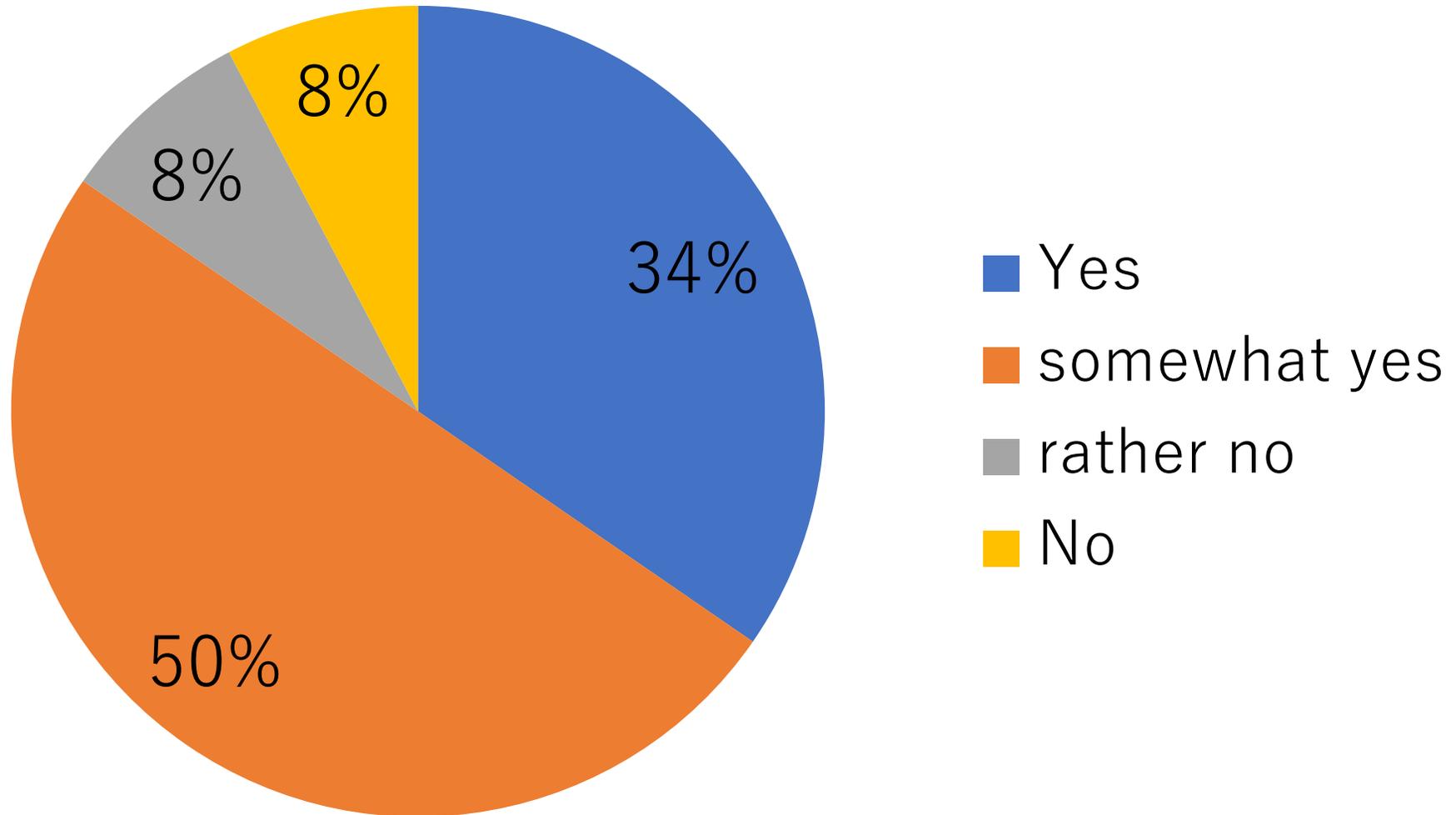
Were you interested in an app with AI?



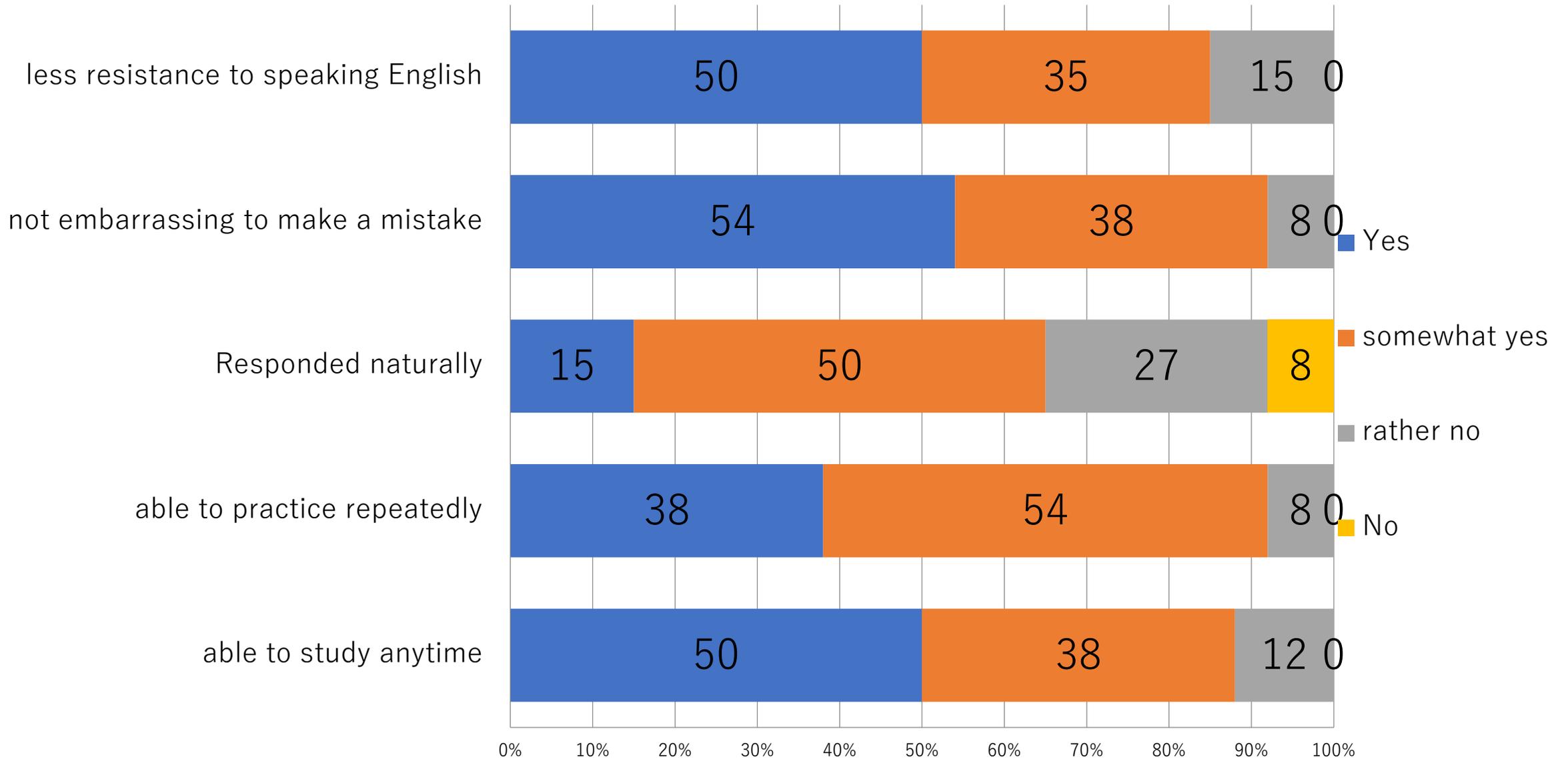
Did you enjoy?



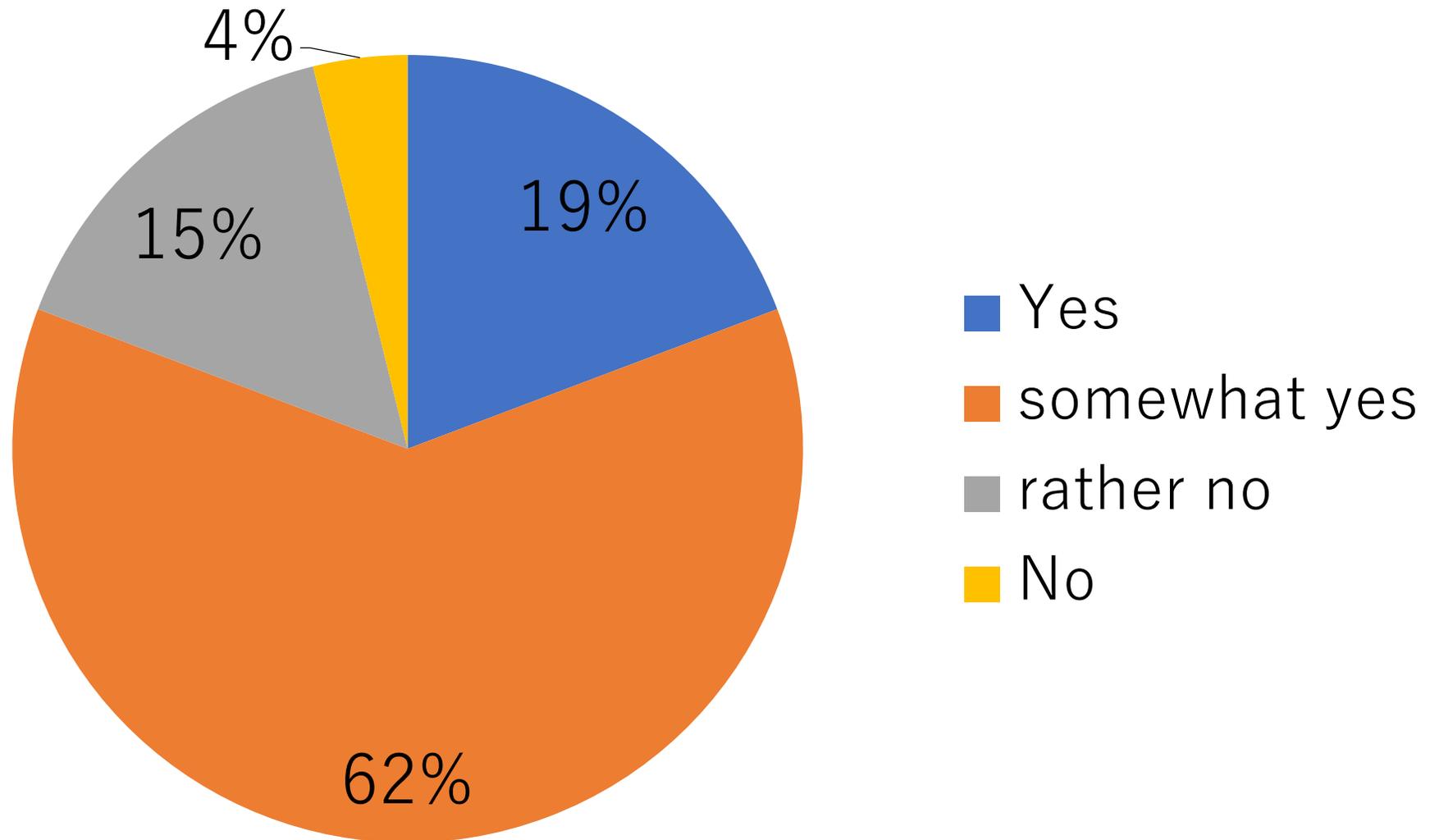
Did you find AI conversation natural?



Good features of practicing with AI



practice with AI matched your learning style?



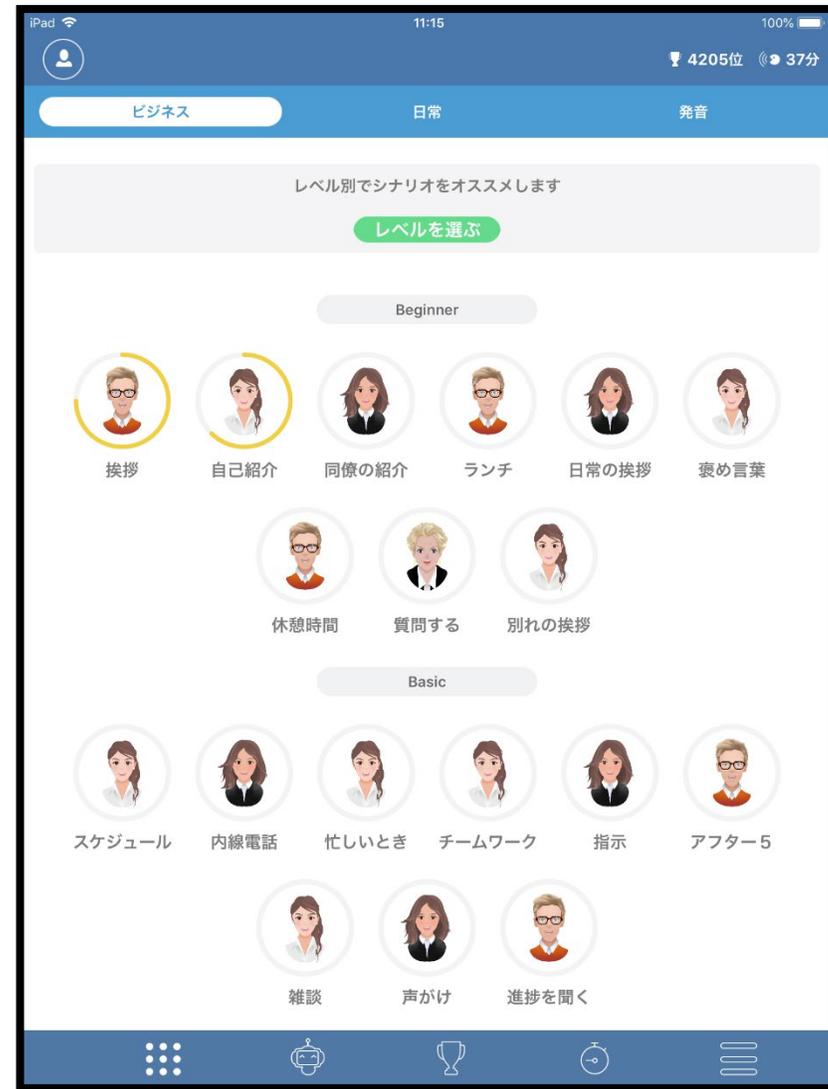
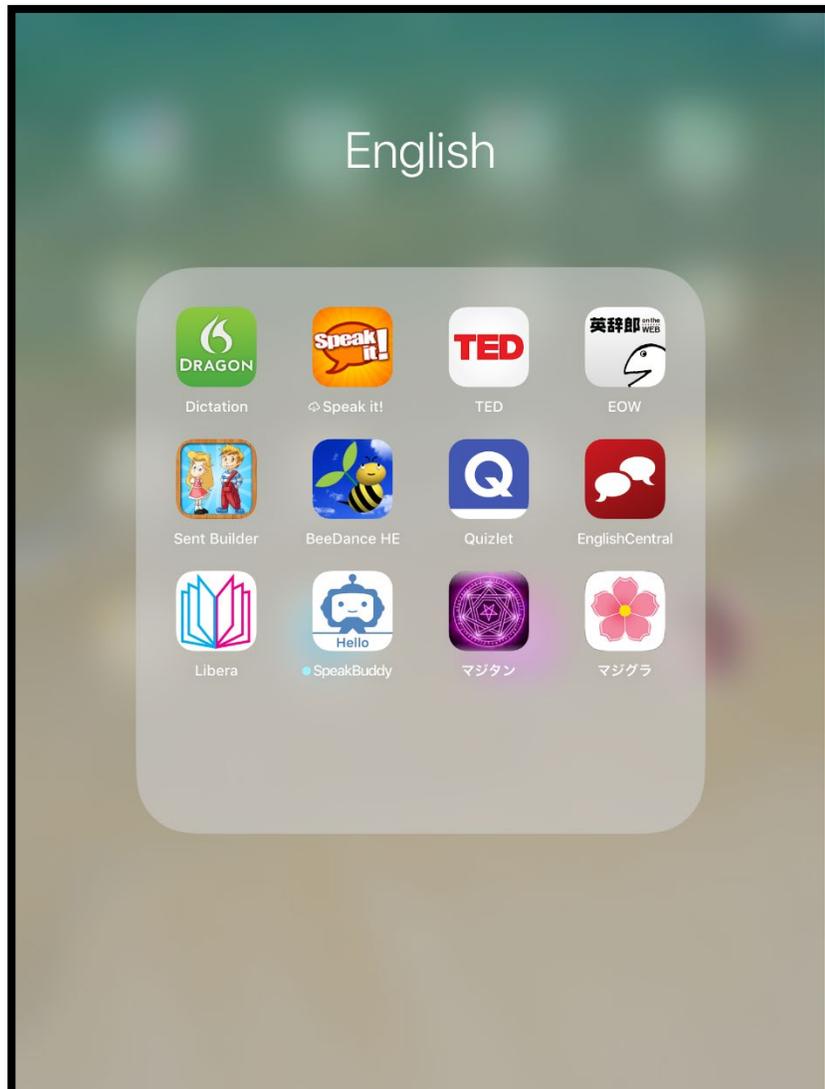
The Second Trial — SpeakBuddy (appArray)

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

Study

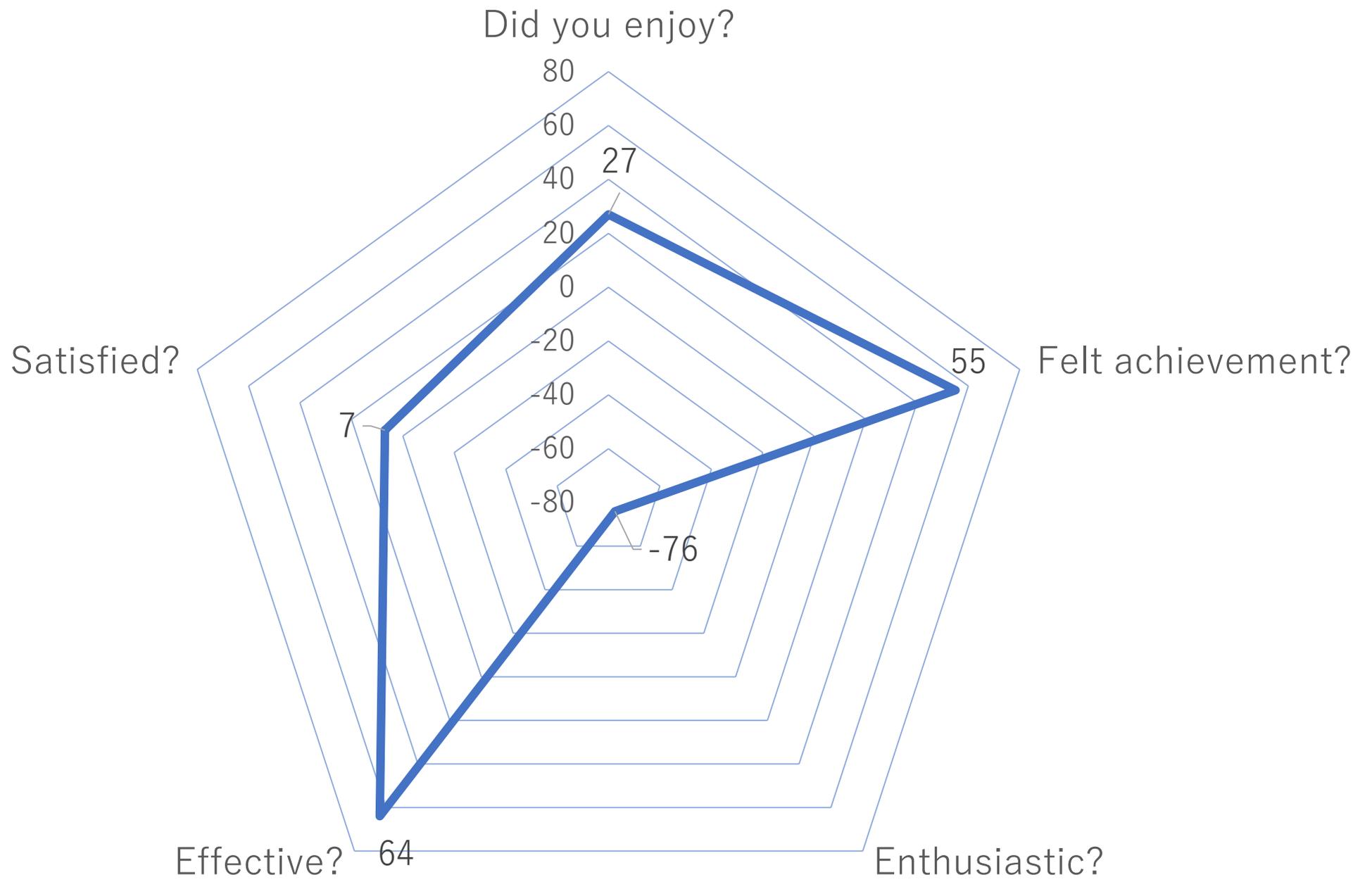
- 209 freshmen of a university in Japan
- Information and Computer science majors
- April to December 2018
- For nine months
- In class study
- Questionnaires - last week in May.

SpeakBuddy

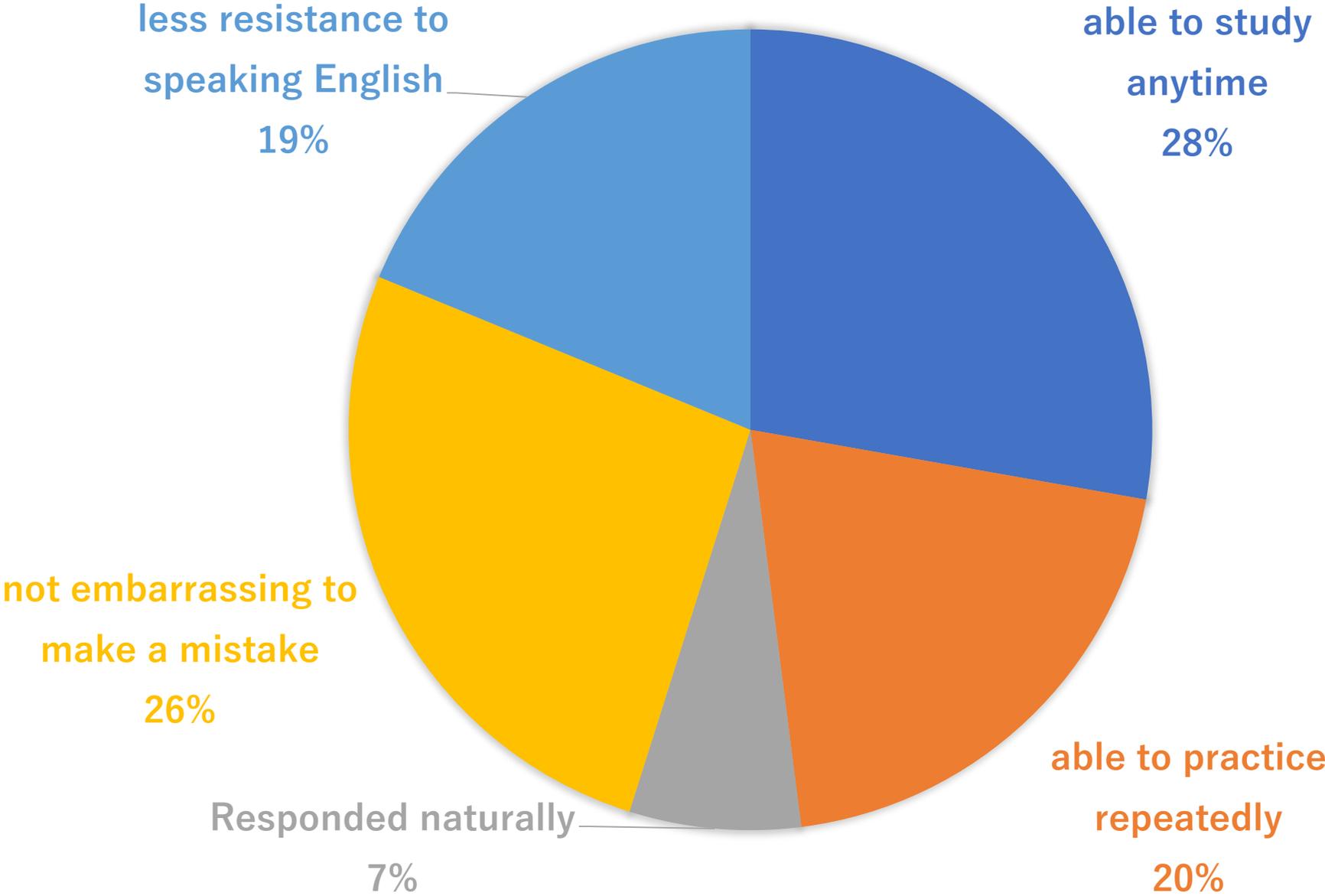


Questionnaire

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



The image shows a screenshot of the Sinewave website. At the top left is the Sinewave logo with the tagline "WAVE OF THE FUTURE". To the right of the logo is a navigation menu with the following items: HOME, 会社案内, サービス内容, 採用情報, and お問い合わせ. The main content area features a background image of a smiling young girl in a school uniform. Overlaid on this image is the text: "AI がスピーキングを自動採点" (AI automatically scores speaking), "英語 4 技能対策アプリ" (English 4 skills countermeasure app), and "ELST" in large, light blue, outlined letters. Below "ELST" is the text "English Listening & Speaking Testing" in a smaller, blue font.

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. ~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 km², 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: _____ km²

_____ 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 1()()() 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: 2()()()()?
- 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: 3()()()()?
- B: Well, it usually takes about 12 hours.
- A: Wow, it is almost half a day.
- B: Yes, but 4()()()() ()? 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 and two menu items: '教科書' (Textbook) with a book icon and '宿題' (Homework) with a document icon. The main content area is titled '教科書コース' (Textbook Course) and features a large blue button labeled 'Introducing Japan in English' with a '変更' (Change) button to its right. Below this is a '全ての単元' (All Units) section displaying eight blue buttons labeled 'Chapter 1' through 'Chapter 8', each with its corresponding chapter name written below it. The bottom left corner of the sidebar shows the version number 'v0.0.7'. The browser window title bar at the top right shows the user name 'Makoto ...' and standard window controls.

ELST

教科書

宿題

教科書コース

Introducing Japan in English

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

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 7

Chapter 8

v0.0.7

Makoto ...

Vocabulary Practice

← Vocabulary Study — ×

得点 : 74 点

continent
[ˈkɒntɪnənt] 
大陸

🔊 録音を再生 テスト

 録音  

Vocabulary Test

The screenshot shows a mobile application window titled "Vocabulary Study". The main content area displays the English phrase "consist of" in a large, bold font. Below this, there are four rounded rectangular buttons arranged in a 2x2 grid, each containing a Japanese translation or related term. The buttons are: "大陸" (top-left), "工業化した" (bottom-left), "～から構成される" (top-right), and "経度" (bottom-right).

← Vocabulary Study

consist of

大陸

工業化した

～から構成される

経度

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)

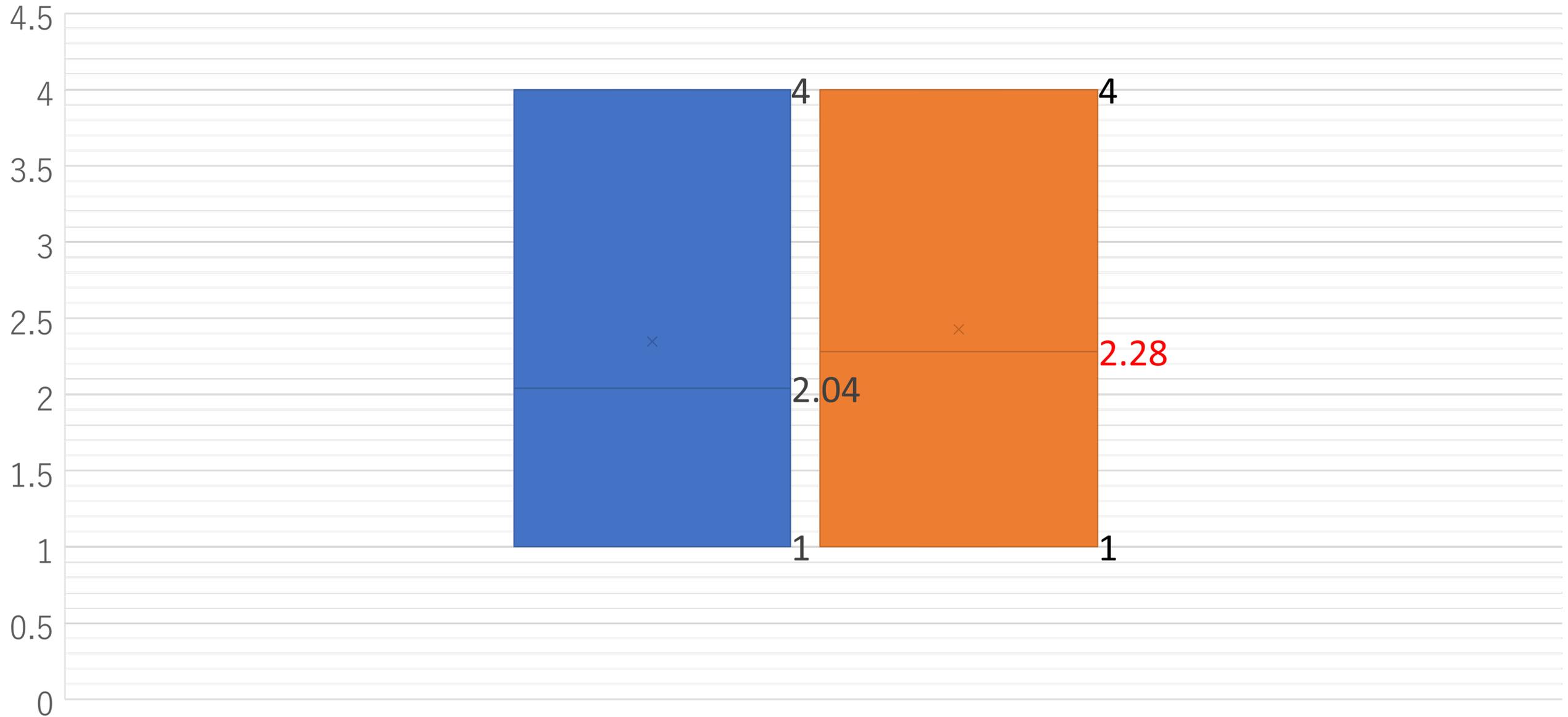
[前回の成績](#)



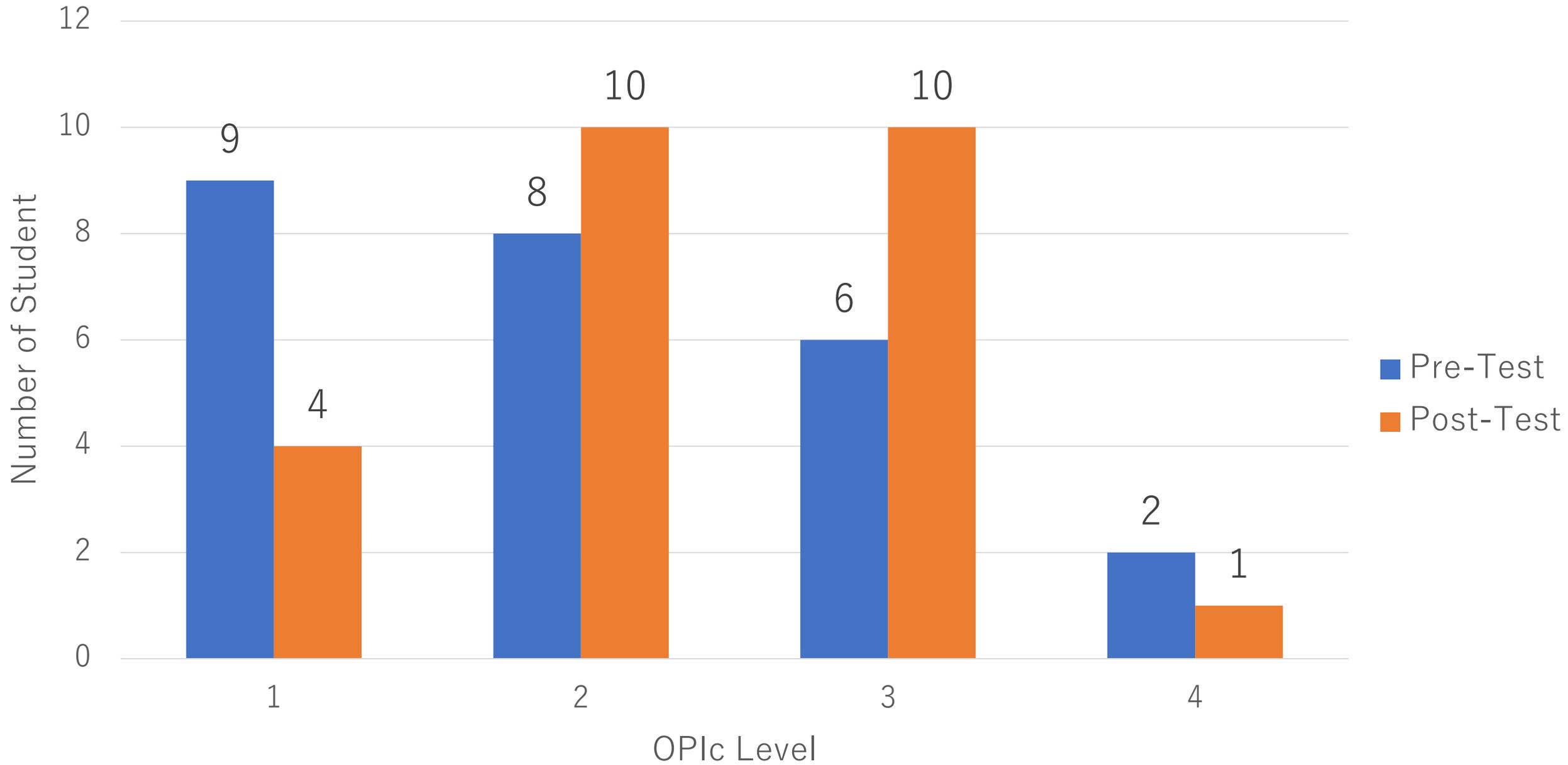
Comparisons of Pre-Test and Post-Test Results of OPIc and TOEIC

OPIc Pre and Post Test Score Comparison

■ Pre-test ■ Post-Test

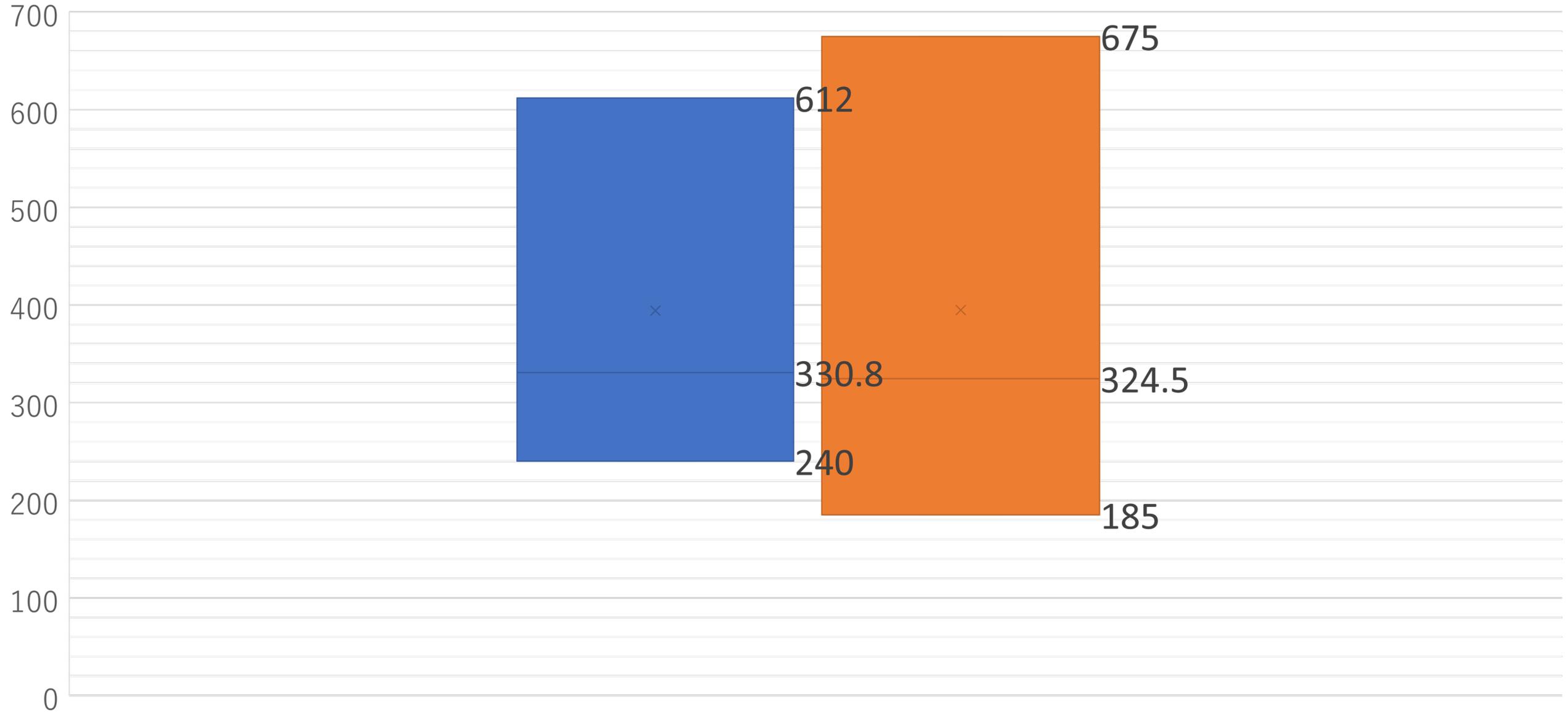


OPIc Pre and Post Test Comparison

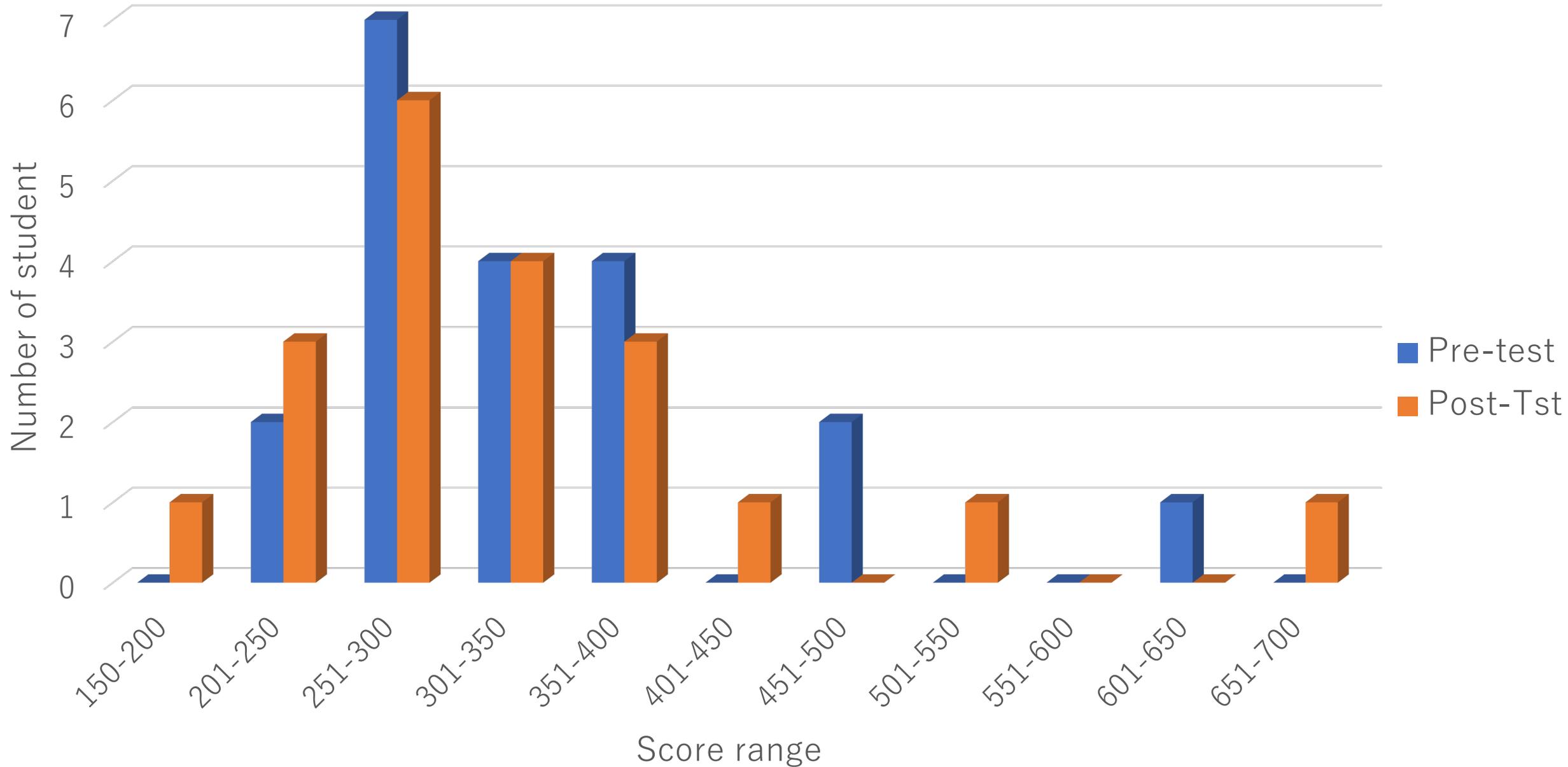


TOEIC – Pre and Post test Results

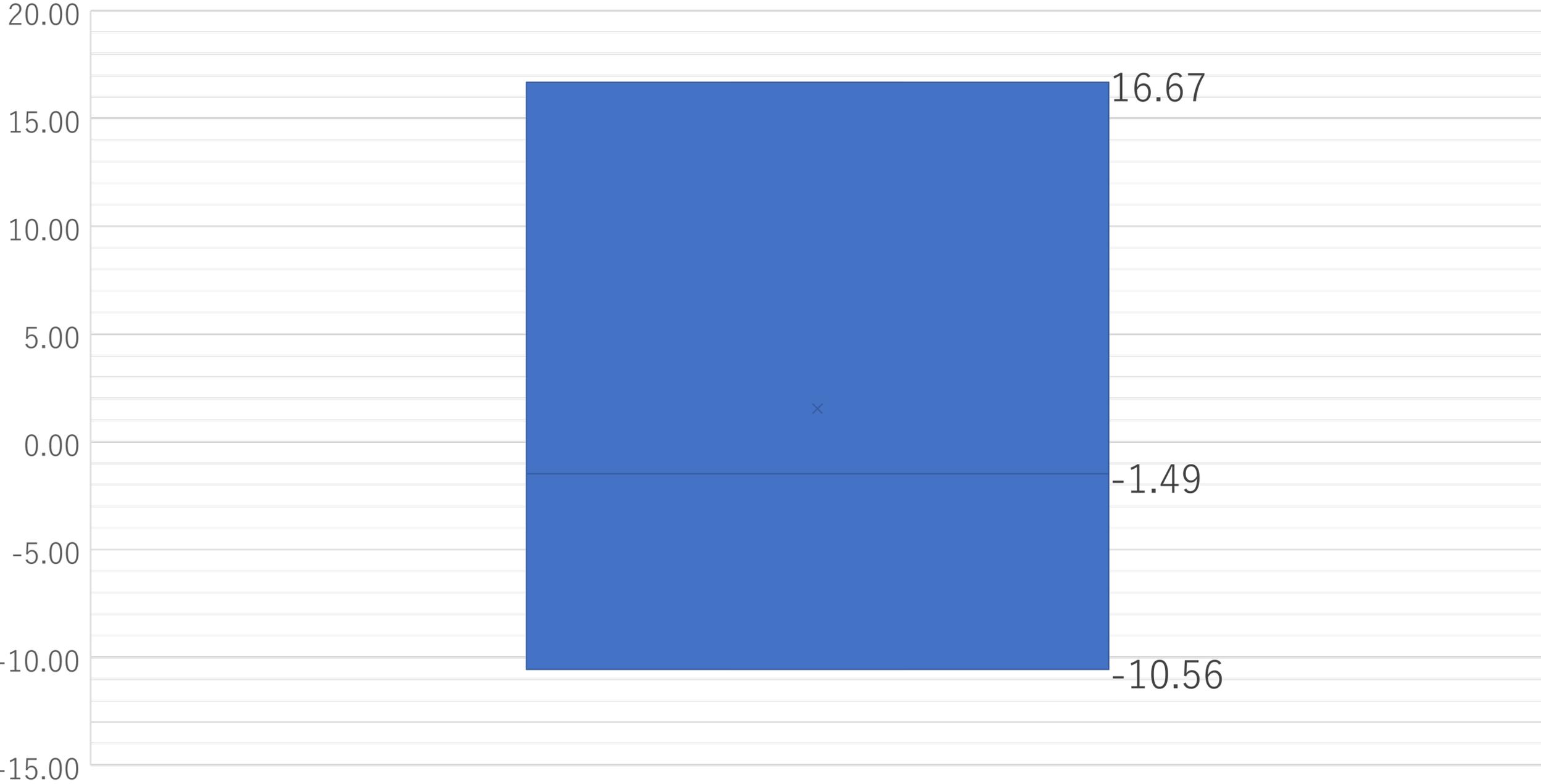
■ Pre-test ■ Post-test



TOEIC Pre and Post Test Comparison

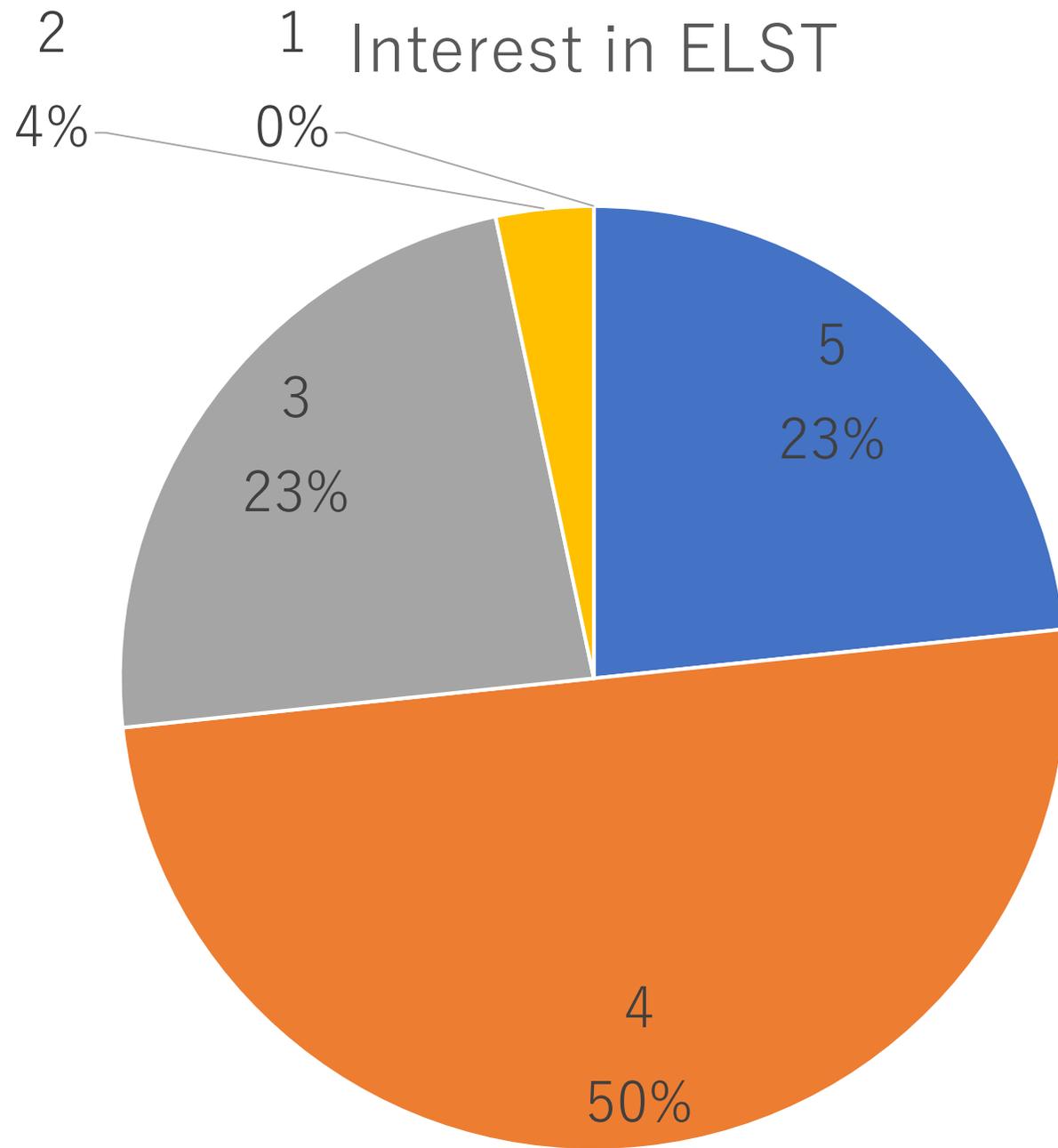


TOEIC Score Development Rate

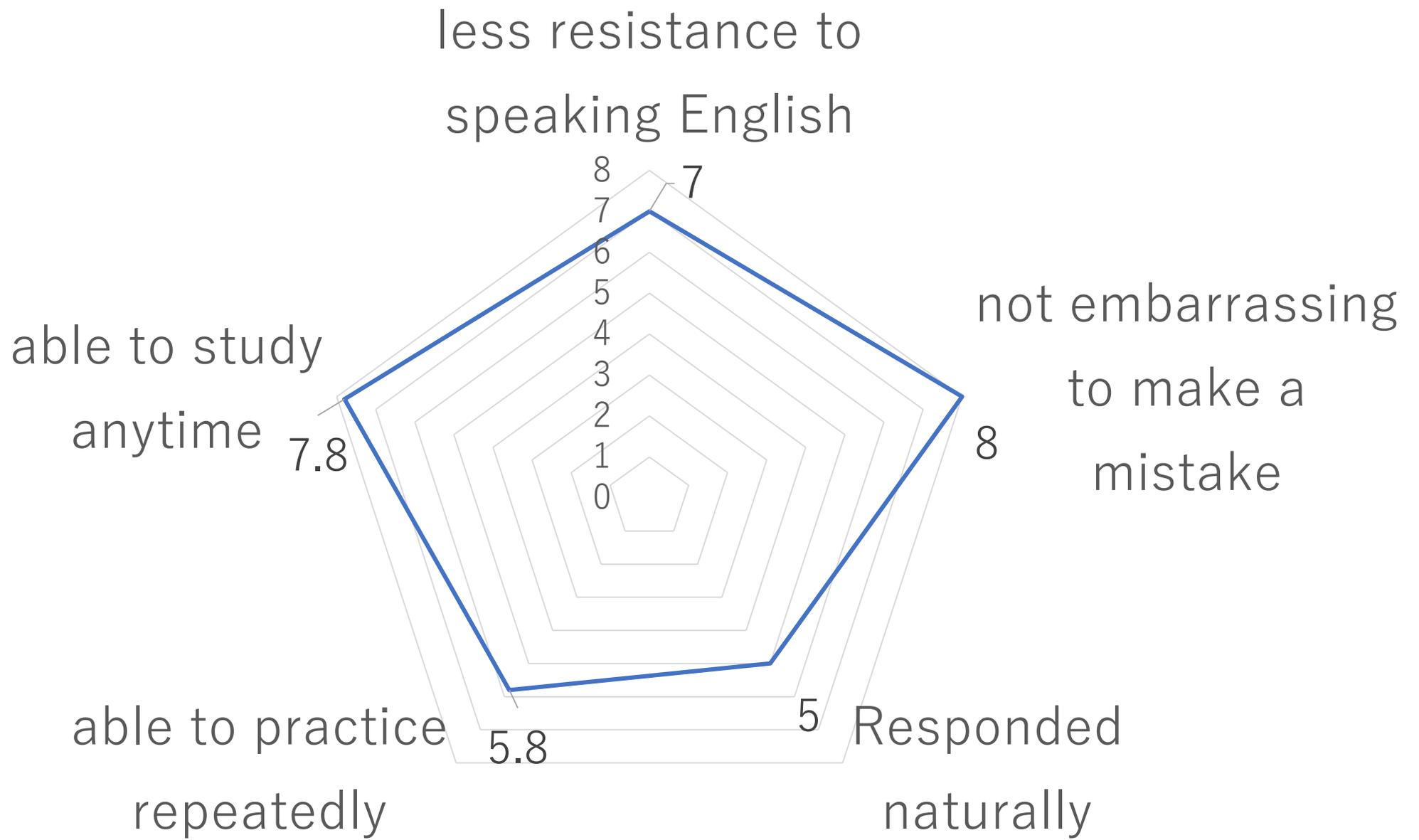


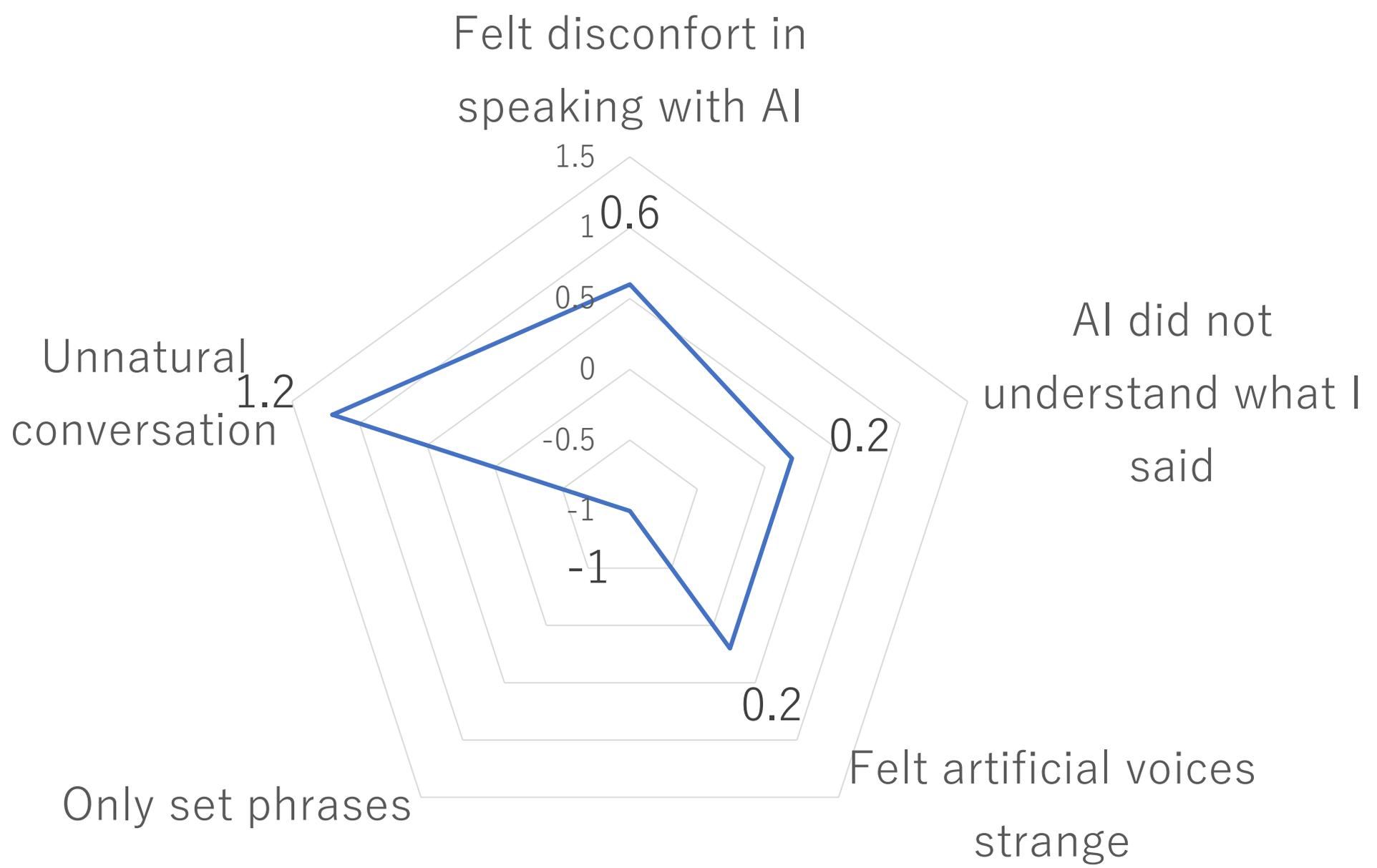
Questionnaire

Interest in ELST

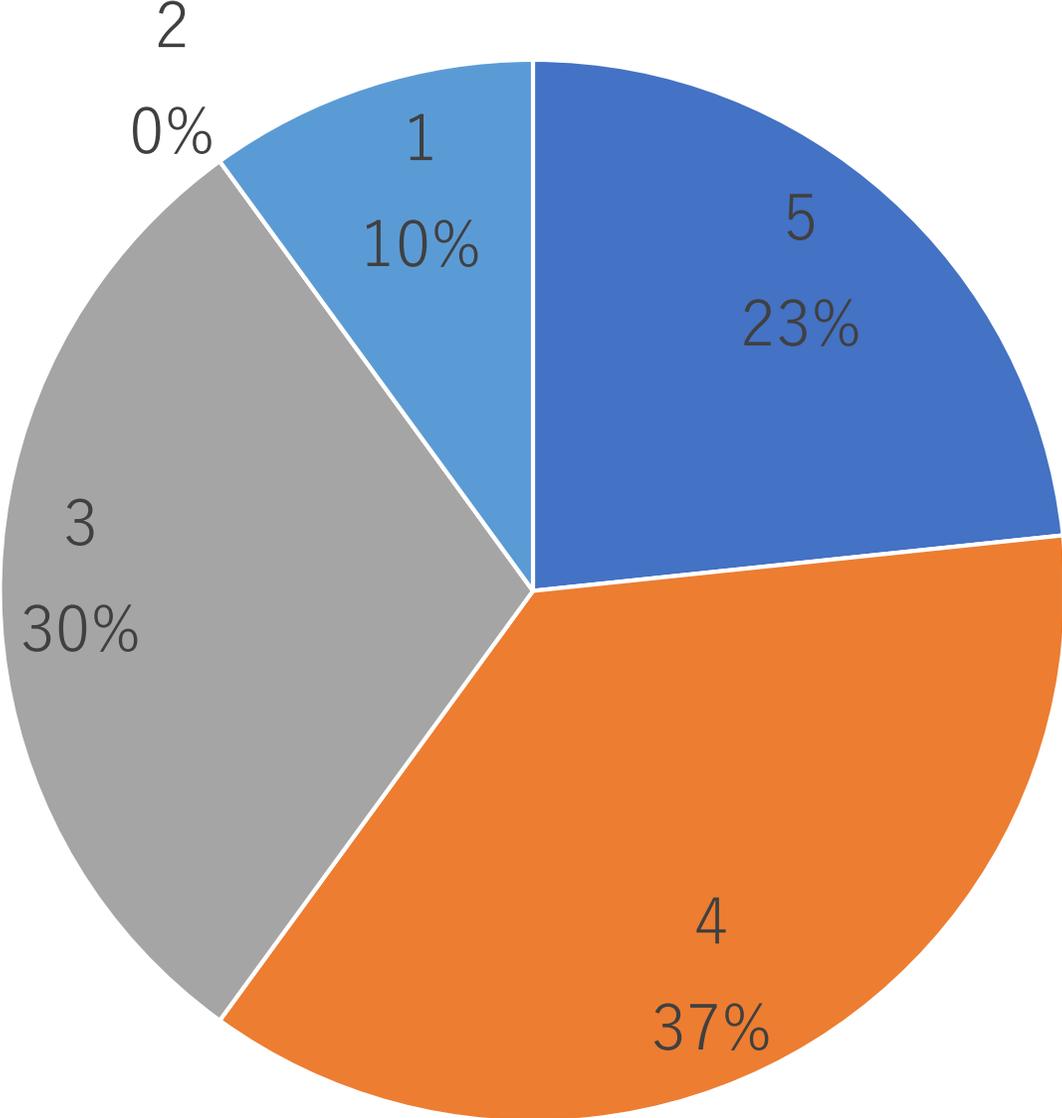




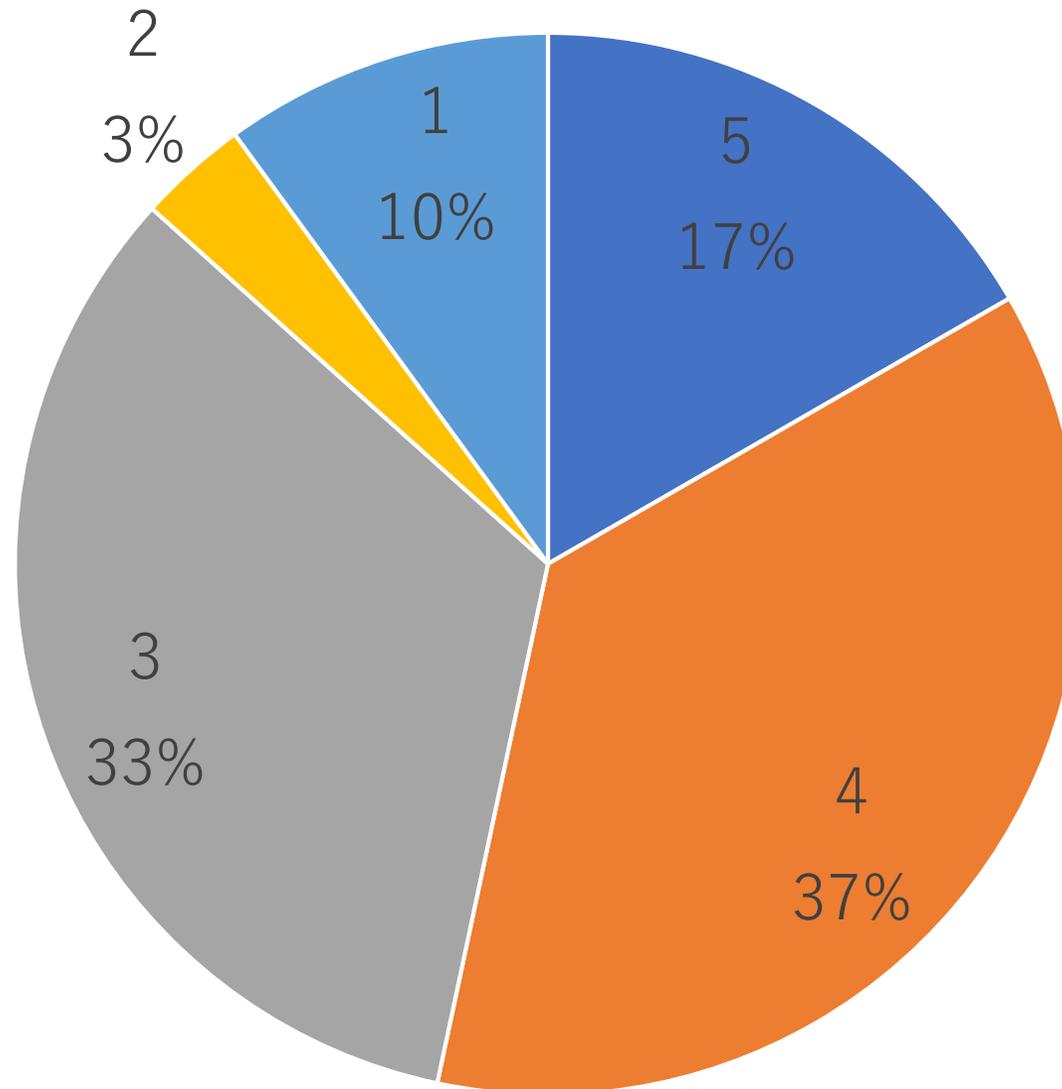




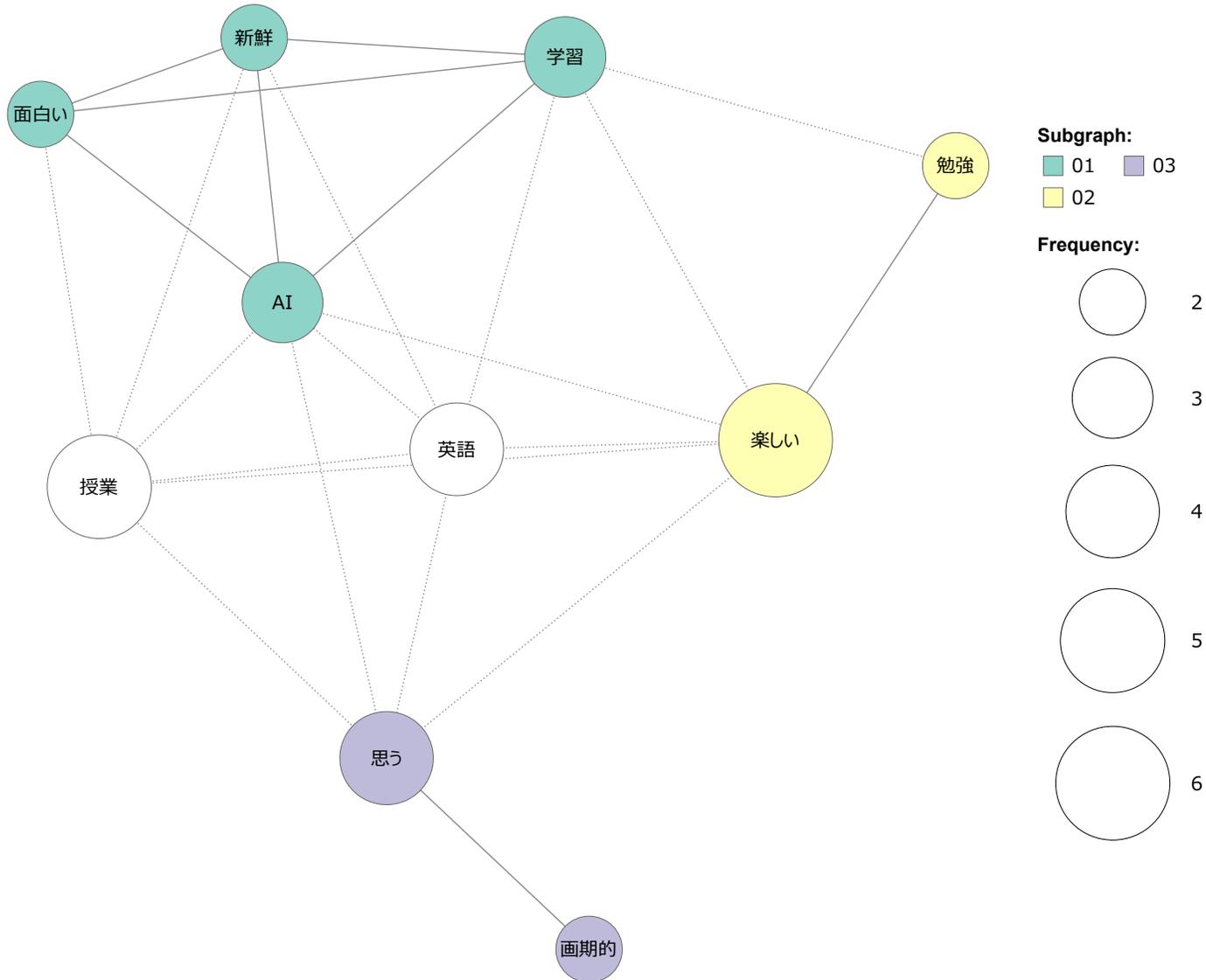
Speaking practice with AI matches with your learning style



Would you like to use this kind of app privately?



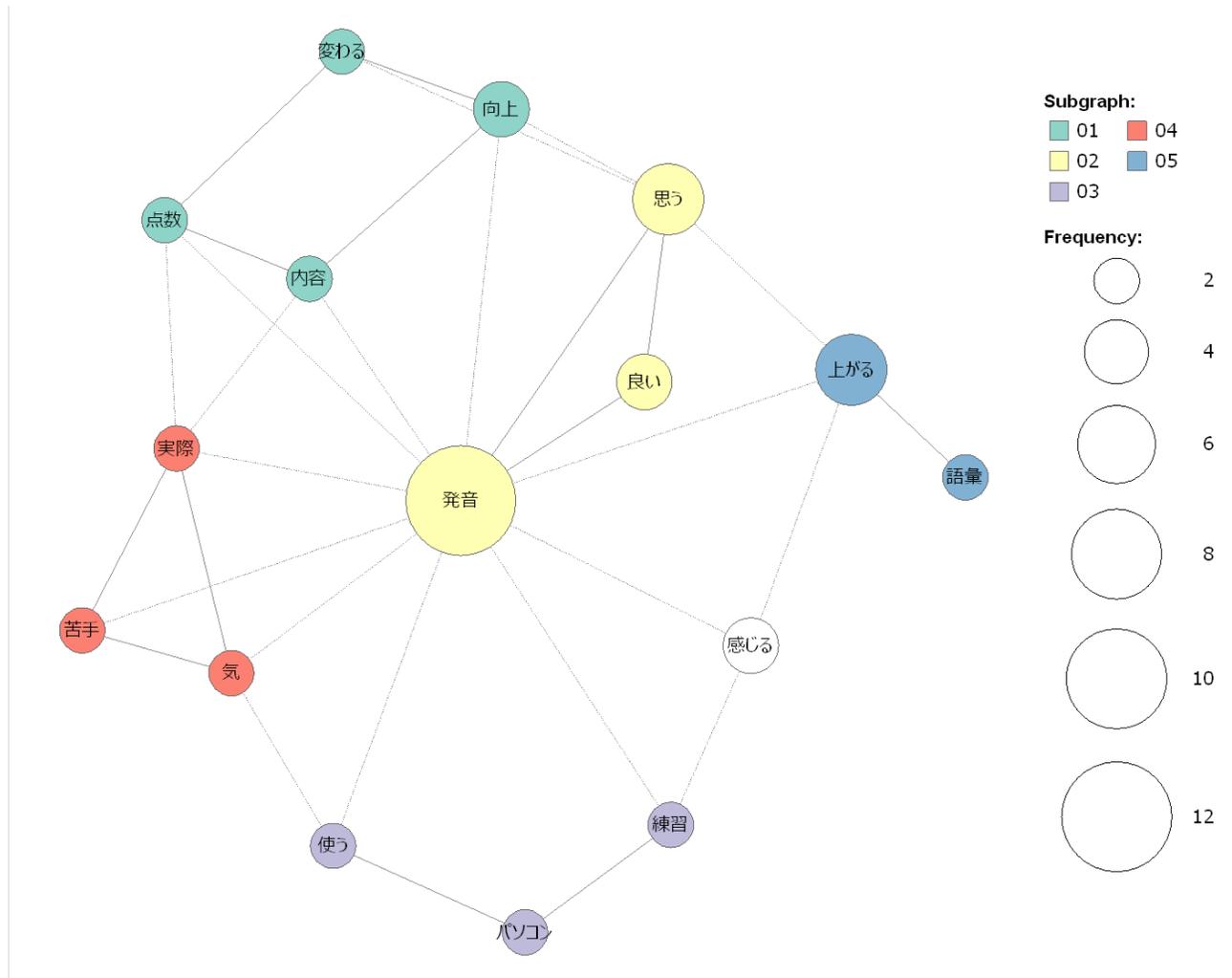
Questionnaires-Comment 1



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.
			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.
			4.3.2. I will get a shirt.
			4.3.3. I am not sure yet.