Development and Operation Result of Japanese Accent Perception Test Based On e-learning System

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Introduction and Outline

- First of all, the concept of e-learning of previous research is summarized, and we reflect *the instructor's perspective* necessary for e-learning.

- Then based on the concept of e-learning, we developed an online Tokyo accent test, [The AJ-phonetic test].

- Meanwhile, high and low voices of Japanese cause a Japanese accent, and we designed the AJ-phonetic test by introducing e-learning technology so that learners can practice a Japanese accent in regular and multimedia classes or online Japanese-classes.

- Besides, We analyzed the results of about 12 years and two months and revealed what we need for future Japanese accent tests and education.

e-learning

- Fundamental criteria of e-learning.
  - First, e-learning should be able to update, store, distribute, and share training or information through the network immediately.
  - Second, it should be delivered to end-users through computers using standard Internet technologies.
  - Third, e-learning should focus on learning concepts as learning solutions that go beyond the paradigm of traditional learning methods.

Rosenberg (2002)

- Standards of e-learning
  - *Accessibility* that enables learners to access education and information remotely
  - instructors' *immediate feedback* to learners
  - *Learning solutions that go beyond the traditional paradigm of learning*.

Rosenberg (2002)

e-learning + *perspective of the instructor*

- However, many studies to date, including Rosenberg (2002), have focused on the criteria of e-learning mainly on the *learner's perspective*. But, we believe that researcher needs to consider *the instructor's perspective*.

- For example, until now, instructors who want to teach Japanese accents have had to spend a lot of time and effort in conducting Japanese accent exercises or tests for Japanese learners and processing the resulting data.

- Above all, instructors who want to practice accent exercises or tests have had to gather learners in one place so far, but it was complicated to gather busy learners in one place on time.

- Lastly, Japanese accent education has limitations on multimedia equipment and test location, which makes it challenging to train with limited resources in a limited time.

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e-learning for the accent test

- For instructors, e-learning could have a comprehensive academic management system that can manage information such as learner's learning history, progress online (e.g., *LMS; Learning Management System*).

- This system enables the instructor to give *appropriate feedback* according to the level and achievement of each learner and to improve the content of the textbook and adjust the difficulty according to the learner's understanding and reaction.

- By building an automated online test system, instructors can effectively invest much of their time spent on non-education, such as exam submission and grading and collecting and classifying result data. This personalized education enables the instructor to maintain the learner's interest in learning and reduce the probability of dropping out.

- So this study developed *The Online Tokyo Accent test Program* [AJ-phonetic Test].
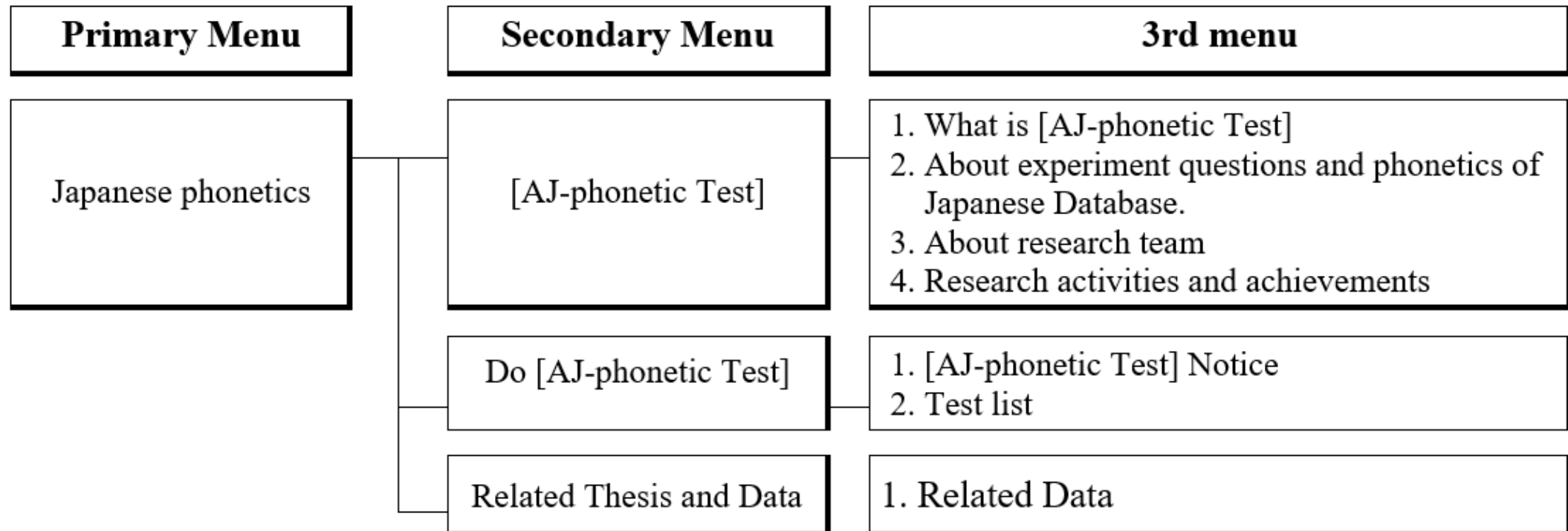
e-learning + *perspective of the learner*

- The AJ-phonetic test also wanted to meet the requirements of e-learning from the learner's point of view.

- The learner can always communicate with the instructor through the e-learning system of The AJ-phonetic test. It has communication means such as bulletin boards (Q and A, Freeboard) and e-mail, and likewise, exchange opinions with imaginary classmates who are learning together.

- Through this virtual community, the learner can eliminate the distance from the instructor even within the e-learning system and feel the sense of peer with the virtual classmates. It is similar to the effect of learning in a traditional teaching-learning system. So learners can overcome the spatial and temporal constraints by using computers connected to the network, and learners can get all of this by participating in education at the time and place they want.

- Finally, learners can see their progress, achievements, and more through their custom pages within the AJ-phonetic test. Learners can accurately identify their current location and set learning goals through an objective evaluation system and analysis function, which can lead to learning motivation.

AJ-phonetic test with LMS

- Web Access: http://www.japanese.or.kr/phonetic_main.aspx

- Programming Language & DB : Visual Basic.Net / ASP.Net 2.0 / MS-SQL

- The basic structure of [AJ-phonetic test]

Primary Menu	**Secondary Menu**	**3rd menu**
Japanese phonetics	[AJ-phonetic Test]	1. What is [AJ-phonetic Test] 2. About experiment questions and phonetics of Japanese Database. 3. About research team 4. Research activities and achievements
	Do [AJ-phonetic Test]	1. [AJ-phonetic Test] Notice 2. Test list
	Related Thesis and Data	1. Related Data

AJ-phonetic test list 1
Web Link: http://www.japanese.or.kr/phonetic_do.aspx

- **TTA00**
  - 40 words more than 2 Mora (2 mora: 4 words/ 3 mora: 8 words/ 4mora: 12 words/ 5mora: 16words)
  - Some words have an accent, and the others do not.
  - Check the [Yes] in case you think that there is an accent (radical dropping down point). Otherwise, check the [No] button.

- **TTA01**
  - Same to TTA00
  - Check the [Yes] in case you think that there is an accent (radical dropping down point). Otherwise, check the [No] button. Also, if the [Yes] button checked, you must find the location of the radical dropping down point and check at [Answer (2)].

- **TTA02**
  - 20 words more than 2 Mora (2 mora: 2 words/ 3 mora: 4 words/ 4 mora: 6 words/ 5 mora: 8 words)
  - Every word has an accent

AJ-phonetic test list 2
Web Link: http://www.japanese.or.kr/phonetic_do.aspx

- TTA03: A special phoneme
  - 32 words more than 3 Mora

	Three mora	Four mora	Five mora		Six mora	Total
ン(撥音) syllabic nasal	3	4	4			13
ー(長音) prolonged sound	3	3	3	2		12
ッ(促音) geminate consonant	2	4	2	1	1	10
	8	11	12		1	32

- Check the [Yes] in case you think that there is an accent (radical dropping down point). Otherwise, check the [No] button. If the [Yes] button checked, you must find the location of the radical dropping down point and check at [Answer (2)].

AJ-phonetic test Common details

- The AJ-phonetic test play voice file of each word twice

- The order of questions for all words is random

- Quality of voice files: 22kHz, 16Bit

- Voice file Narrator: a 30-year-old woman from Tokyo who is a current Japanese teacher

2. Test list

2-1. All test is need to be logged. If you don't have an Id, please register to 「AJ」 system.

2-2. Now, register to 「AJ」 system and get an ID → ── **Go**

No	Test Name	Number of Question	Period	Research Team	ETC.	Do Test
1	Test of Tokyo accent Test Code : TTA00	40	2007.01.05 ~ 2012.01.05	Yu Young, Kim & Jang Won, Choi	**Now on working**	Start

No	Test Name	Number of Question	Period	Research Team	ETC.	Do Test
2	Test of Tokyo accent Test Code : TTA01	40	2007.01.05 ~ 2012.01.05	Yu Young, Kim	**Now on working**	Start

e.g.)

さいたま
1) （アクセントあり）
（악센트 있음）
(There is an accent)
☑ Yes
○ No

ながれぼし
2) （アクセントなし）
（악센트 없음）
(There is not an accent)
○ Yes
☑ No

e.g.)

さいたま ① ② ③ ④
1) （アクセントあり）
（악센트 있음）
(There is an accent)
☑ Yes
○ No
○ 1 ○ 2 ☑ 3 ○ 4

ながれぼし ① ② ③ ④ ⑤
2) （アクセントなし）
（악센트 없음）
(There is not an accent)
○ Yes
☑ No
○ 1 ○ 2 ○ 3 ○ 4

Result of "Phonetic Experiment & Test"

ID : **yuiyu**   Name : 유이유키   Test Name : **Test of Tokyo accent**   Number of question : **40**

Total : 36 Point

Your percentage of correct answer : 90.00 %

You and others, total average percentage of correct answer : 84.53 %

Your hearing level : (Under construction function)

Thank you for your cooperation.

Test will be helpful to our research and you can prove your hearing skills, too.
And You can check your test result at any time from [My Test Record] page of 「A」
See you again.

| Go back Do Test Main | Go my test record page |

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< My Test Record - [AJ-phonetic Test] >

ID : **yuiyu** | Name : 유이유키 | Your organization : 大阪大学·同徳女子大学

Go back, My test records home

1. Record of 『Japanese phonetic Test & Practice System』 [AJ-phonetic Test]

<Notice>

1) If you want to know the more information or detail result of the test, click the **[Select] button** in the below test-result list.

2) You can find detail information about the test you took. For example, you can check the correct answer and the answer you handed in.

3) Moreover if you want listen the phonetics test you took one more time, please click the **[Hearing Start] button** below. Test is absolutely same test you already took.

Test Code	Test Date	Test Status	Point	Percent	Select
TTA00	2019-08-09 오후 6:17:07	Hand In	36	90.00	Select
TTA00	2017-12-22 오후 11:10:43	Retire	0	0.00	Select

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1.1. The details of your test record

1) Test code : **TTA00**
2) Test date : **2019-08-09 오후 6:17:07**
3) Your point : **36** points / **90.00** %

4) A given question LIST

[1]しごと　[2]まままま　[3]あなた　[4]まままま　[5]まま
[6]ままま　[7]まままま　[8]ままま　[9]おしぼり　[10]みかいはつ
[11]たからもの　[12]まままま　[13]ねこ　[14]もしもし　[15]ままま
[16]まま　[17]みやげもの　[18]ながれぼし　[19]おしいれ　[20]まままま
[21]ままま　[22]たかとび　[23]だいどころ　[24]おなまえ　[25]だいきらい
[26]まままま　[27]さいたまし　[28]おととい　[29]となり　[30]なみだ
[31]まま　[32]ままま　[33]ままま　[34]わすれもの　[35]まままま
[36]ままま　[37]まま　[38]いす　[39]ままま　[40]まままま

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Correct answer -A	N	N	Y	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	N	N
Your answer -A	N	N	Y	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N
Correct answer -B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Your answer -B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This test is only whether there is accent or not.
(악센트 유무만 판단하는 테스트 입니다./アクセントの有無だけを判断するテストです。)

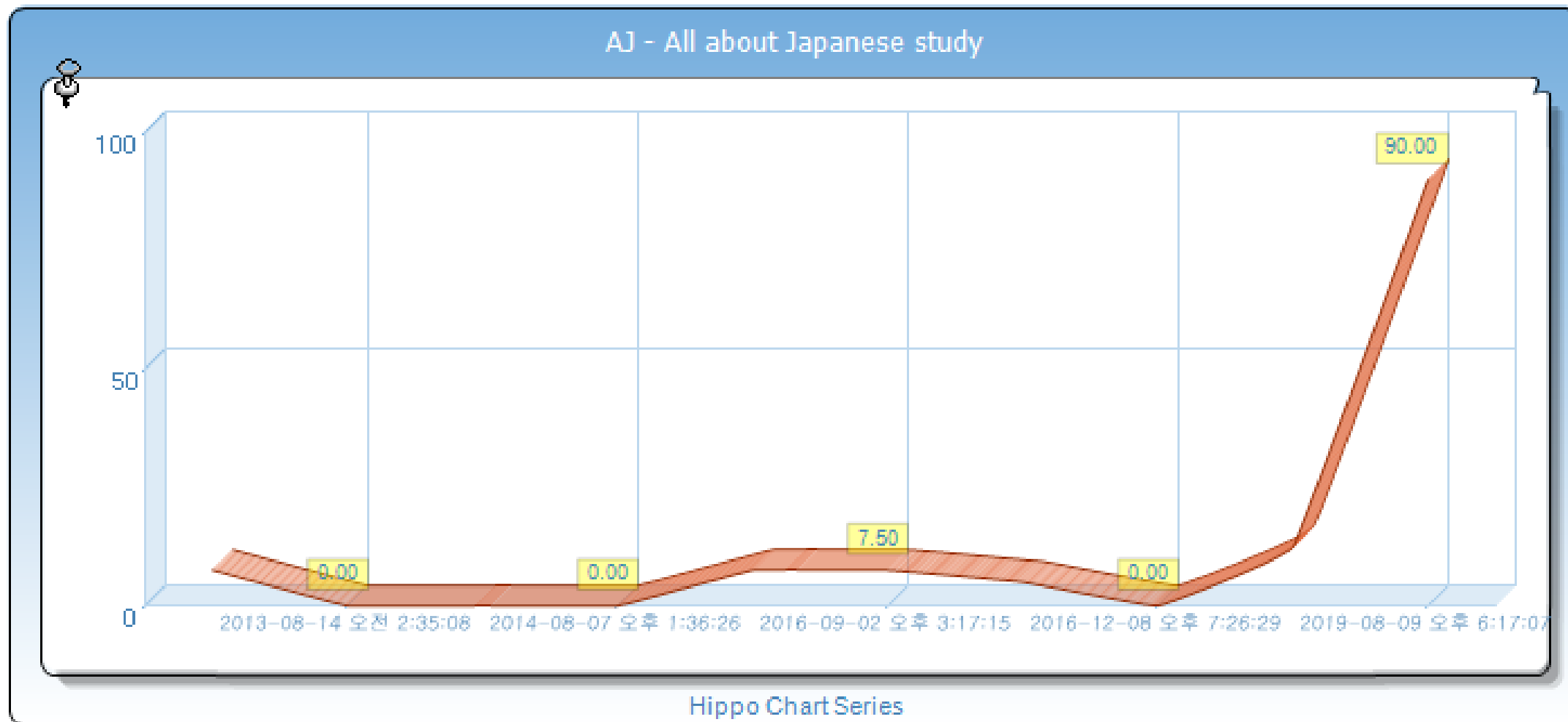| No	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Correct answer -A	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	N	N	N	N	N
Your answer -A	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N
Correct answer -B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Your answer -B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

5) Repeat your hearing test :　[Hearing START]　[Hearing STOP]

▶■ 중지됨

2. Shift graph of your [AJ Phonetics test] point.

2.1 Test of Tokyo accent - Test Code TTA00

AJ - All about Japanese study

90.00

100

50

7.50

0.00   0.00   0.00

0

2013-08-14 오전 2:35:08   2014-08-07 오후 1:36:26   2016-09-02 오후 3:17:15   2016-12-08 오후 7:26:29   2019-08-09 오후 6:17:07

Hippo Chart Series

AJ-phonetic test
– Differentiation from other phonetic tests 1

- Comparison of the accentless pitch and the accent pitch
  - In the case of the accentless pitch (the flat type), the correct answer rate is 50% because it determines whether or not it has an accent.
  - However, the accent pitch (the relief type) has 50%, 33.3%, 25%, and 20% chances of correct, depending on the number of Moras (2-5).
  - Therefore, it is not desirable to experiment with the accentless pitch and the accent pitch at the same time, and it may confuse learning. Therefore, in this study, we added an experiment that distinguished two types. (e.g. TTA00 vs TTA02)

- Comparison between accent pitches
  - Relatively high numbers of Mora are likely to increase in difficulty, regardless of their ability to listen.
  - Therefore, in the AJ-phonetic test, dummy words were added to balance the number of Moras, so that learners could cope with various Moras and increase the learning effect. (e.g., two mora word: いす, まま | five mora word: ながれぼし, まままま)

AJ-phonetic test
– Differentiation from other phonetic tests 2

- Intensive Test for Special phoneme
  - In this study, we designed an accent test that consists only of words with special-phonemes [ン(撥音, a syllabic nasal), ー(長音, a prolonged sound), ッ(促音, a geminate consonant)], so that learners can adapt to special-phonemes. (e.g., おかあさん, かっこく)

Analyzing AJ-phonetic test results 1

- While it was easy to predict, the results(TTA00~03) clearly show that the higher number of Moras, the lower the percentage of correct learners. (For reference, the AJ-phonetic test introduces a system that automatically changes the difficulty level depending on whether or not the word is correct. Also, the lower the level number, the higher the difficulty.)

- Therefore, *it is necessary to balance the number of Moras in the accent test, and adding a dummy word like this study may be a better way.* e.g., ままま, まままま

Mora	Level	Count
2	8.17	6
3	7.75	20
4	7.21	29
5	6.94	36
6	5	1
Average and Sum	7.26	92

Analyzing AJ–phonetic test results 2

- As expected, the TTA00 had the highest average score to determine the accent.

Test	TTA00	TTA01	TTA02	TTA03	All
Average	86.31	80.59	79.33	69.21	76.43

- However, this study found some interesting things about TTA01 and TTA02. First of all, TTA02 has accents on every word, so it only is needed to find the accent location. However, in the case of TTA01, it is expected to be relatively difficult to solve because it is necessary to find the accent and the position of the accent at the same time.

- However, learners scored relatively high on TTA01, which was expected to be more difficult than TTA02.

- The reason for this result is that half of the words in TTA01 are words that have no accents, so the probability of correct answers in TTA01 is 50%. However, the TTA02, which must accurately locate the accent, has a less than 50% chance of getting an answer. It is essential. *Because it proves that the hypothesis of this study which designing a test by dividing the accentless pitch and the accent pitch words are fairer and more accurate to learners.*

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Analyzing AJ-phonetic test results 3

- ン(撥音, a syllabic nasal), 一(長音, a prolonged sound), and ッ(促音, a geminate consonant) of TTA03 consist of 13, 12, and 10 words, respectively. So the average difficulty of each special phoneme is as follows.

	3 mora / Level	4 mora / Level	5 mora / Level				6 mora / Level	Total / Level
ン(撥音) A syllabic nasal	3 / 6.67	4 / 6.5	4 / 5.75	2 / 5.5		7 / 5.71		13 / 6.29
一(長音) A prolonged sound	3 / 6.67	3 / 6.3	3 / 5.67		1 / 6	1 / 6	6 / 5.67	12 / 6.21
ッ(促音) A geminate consonant	2 / 7	4 / 6	1 / 5		6	3 / 5.67	1 / 5	10 / 5.91
Total / Level	8 / 6.78	11 / 6.27	12 / 5.65				1 / 5	32 / 5.93

- In the special phoneme test TTA03, the more the number of Moras, the higher the difficulty (6.78 → 6.27 → 5.65 → 5), and *the difficulty of the word containing ッ(促音, a geminate consonant) was relatively high*. Therefore, the instructor needs to pay attention to the accent education of words, including ッ(促音, a geminate consonant.).

Analyzing AJ-phonetic test results 4

- Through the results of this study, it was confirmed that learners of Gyeongsang-do and Jeonla-do, which have relatively strong tones or accents, perform better on Japanese accent tests, as in the previous studies.

- However, there have been no comparative studies on obtaining Japanese accents among the dialect speakers of Gyeongsang-do and Jeonla-do, who are learning Japanese.

Region of Korea	Number of candidates	Average				
		TTA00	TTA01	TTA02	TTA03	ALL
Seoul	234	80.00	76.81	76.25	63.54	74.16
Gyeonggi-do	111	83.46	74.63	75.69	69.21	75.76
Chungcheong-do	11	86.11	78.63	61.50	51.44	64.07
Gyeongsang-do	24	85.41	80.55	75.88	69.35	78.51
Jeonla-do	6	86.96	91.18	83.93	73.27	84.11

Legend) Gangwon-do was excluded from the comparison because there were too few applicants (2).

- Therefore, this study analyzed the data of many learners for a long time and found that *Jeonla-do's dialect speaker performed better in all accent tests than Gyeongsang-do.*

Conclusion

- In this paper, the subjects of e-learning are divided into instructors and learners, and Tokyo accent test is conducted [AJ-phonetic test].

- Besides, this study conducted the Tokyo accent test (the AJ-phonetic test) to empirically verify the following hypothesis.
  - First of all, when we do accent tests, we need to make a separate set of words because the accentless pitch and the accent pitch have different levels of difficulty.
  - Secondly, as the length of Mora affects the difficulty in the accent test, it is adequate to add dummy words to control the level of difficulty and increase the learning effect.
  - Thirdly, Korean Japanese learners have difficulty in recognizing accents of words containing special-phonemes, so it is necessary to pay attention to the practice of accents of words containing special-phonemes.
  - Finally, Korean Japanese learners differ in their ability to recognize Japanese accents according to their native tongues. The best scores were in the order of Jeonla-do and Gyeongsang-do, and the learners from Seoul had the most difficulty in recognizing the accent. Therefore, it is necessary to provide Japanese accent education in consideration of learner's origin in Japanese accent learning.

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Thank you

- Thank you very much indeed for your kind attention.

- Have a nice time in Jeju and See you again.