

# Effectiveness and Usefulness of AGA in JCALL: Listening acquisition

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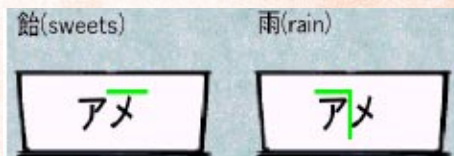
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In learning Japanese language, students will be taught the basic 46 KANA characters. Traditionally, Students learn the KANA characters and the Japanese words by listening repeatedly to audio files or Japanese teacher. This is a time-consuming and wearisome task. Due to lack of information on intonation patterns in speech, students were unable to perceive intonation correctly.

In an attempt to find a new approach to the CALL in Japanese language than what has been adopted thus far, the use of Animated Graphical Annotation (AGA) in Japanese CALL was studied. The AGA was used in learning AKUSENTO(アクセント), SEION(清音), DAKUON (濁音), TANON, CHOUON, and SOKUON (短音、長音、促音) as shown in Figure 1. AGAs are animated graphical symbols that were created to help Japanese learners to acquire the listening and pronunciation skills with its animated and visual features. The following animated graphical symbols,

are AGA symbols that are used in the

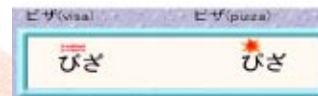
Japanese CALL. , , are used to represent the accent of Japanese words. Learners can use these AGA symbols to help them learn the Japanese AKUSENTO . Accent is low in アメ[AME][sweets]ア, and is high on メ whereas accent is high in アメ[AME][rain]ア, and is low on メ as shown in Figure 1(a). , , are designed for SEION, DAKUON, and HANDAKUON learning respectively. Whereas are designed for SOKUON learning purposes and for TANON and CHOUON learning purposes.



(a)AKUSENTO (アクセント)



(b) SEION & DAKUON (清音 & (半)濁音)



(c) TANON, CHOUON, & SOKUON (短音、長音 & 促音)



SOKUON (短音、長音 & 促音)

Figure 1: Samples of Accent, TANON, CHOUON, SOKUON, SEION, and DAKUON.

The principal research question addressed in this study was:

“Does the Animated Graphical Annotation (AGA) used in the JCALL contribute to the students’ overall listening performances in elementary

Japanese language courses by looking into the Japanese AKUSENTO, SEION, DAKUON, TANON, CHOUON, and SOKUON?”

## Experiment Methodology

We created two JCALL programs. One is designed with the AGA feature and the other without the AGA feature (which were identical in content, but differed in the way the students learned that content). The Graphical Group (GG) students used the program with the AGA feature, whereas the Normal Group (NG) students used the program without the AGA feature.

## Sample

One hundred and twelve students (male=25, female=87) participated in this study in summer 2000. Among these students, 10 were enrolled in Japanese Level 3 at the Faculty of Modern Languages, Universiti Kebangsaan Malaysia (UKM), a national university in Bangi, Malaysia. A total of 57 students were enrolled in the Japanese language course at the Faculty of Modern Languages & Communication, Universiti Putra Malaysia (UPM). Among these students, 55 were enrolled in Japanese Level 1 (elementary) and 2 in Japanese Level 3. Forty-five students were registered at the Center for Modern Languages and Communications, Multimedia University (MMU), a private university situated in the

Multimedia Super Corridor (MSC), Cyberjaya, Kuala Lumpur. Among them, 17 students were enrolled in Japanese I, 11 in Japanese II, and 17 in Japanese III. The average learning time was 3.375 hours per week. On average, the students had some 6.49 months experience in studying the language. The most experienced participant had 32 months of Japanese language learning whereas the novices had only studied the language for 2 months. Out of the participants, 64.29% had studied Japanese language for only 3 months or less at the time of this research was conducted. A total of 92.86% of the sample reported that they were native Chinese speakers while 4.46% reported they were Malay speakers and 2.68% declared that they spoke others-languages such as English, Tamil or Iban.

## Experimental Procedure

The students were divided at random into two groups as shown in the Table 1 and data were collected for this study.

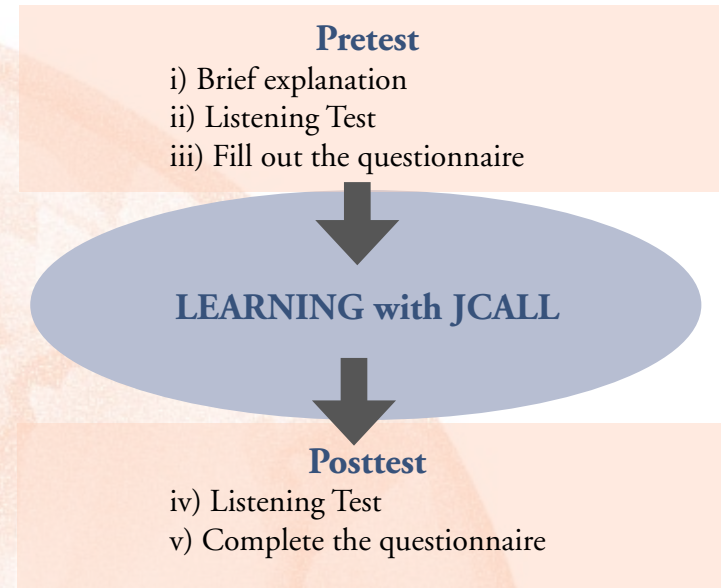
Graphical Group (GG): The students used the JCALL *with* AGA in their Japanese language learning (L1=36, L2=6, L3=14).

Normal Group (NG): The students used the JCALL *without* AGA in their Japanese language learning (L1=36, L2=5, L3=15)

*Table 1: The distribution of the sample data  
(student subjects)*

University	Level	GG	NG
UKM	L1	0	0
	L2	0	0
	L3	5	5
UPM	L1	27	28
	L2	0	0
	L3	1	1
MMU	L1	9	8
	L2	6	5
	L3	8	9
Total		56	56

This study was conducted as shown in the following chart:

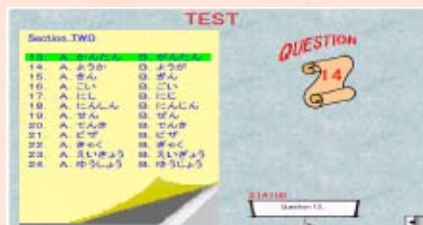


In the pretest, these students (GG and NG) were required to gather in a computer lab to complete a series of tests as shown in the chart above. Before the pretest, the students were told that they were taking part in an experiment on learning Japanese language by using the JCALL courseware. The students were then required to sit for a listening test, created with Macromedia Director. These listening tests were divided into three parts. The first part was an AKUSENTO test of Japanese language such as rain (雨, あめ) and sweets (飴, あめ) as

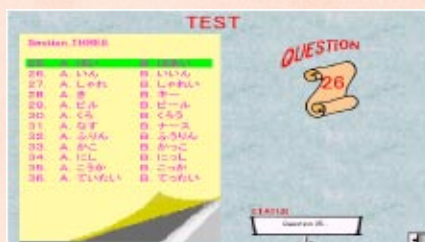
shown in the Figure 2(a).



(a) Section AKUSENTO



(b) Section SEION and DAKUON



(c) Section TANON, CHOUON, and SOKUON

Figure 2: Screenshots of the listening test

This section consisted of 12 questions (but only 11 questions were evaluated. Question 10 was left out of the evaluation due to the inconsistency of the question). By clicking the ‘Start’ button, question 1 (ASA,あさ) was heard three times and the students were required to write their answers down on the paper sheet provided before proceeding to the next question. The second part and the last part consisted of 12 questions comprising SEION and DAKUON words and a test of TANON, CHOUON and SOKUON respectively as shown in Figures 2(b) and 2(c). The students were required to repeat the procedure in the same way as in part one.

After completing the listening pretest (30 minutes), all the students were required to fill out the questionnaires that were distributed to them.

In the learning process with JCALL, GG students were required to use JCALL with AGA and NG student used JCALL without AGA. These two groups of students were given 45-60 minutes to complete this training task.

The posttest was carried out after these students (GG and NG) had completed the JCALL training. Then, they were asked to sit for a listening test again (the questions are the same as the pre test, 30 minutes) and complete the rest of the sections of the questionnaire.

## Data Analysis

After assess the students’ listening tests (pretest &

posttest), the results of the listening test and the questionnaire were directly analyzed with Microsoft Excel and SPSS 10.00 for windows. Microsoft Excel and SPSS 10.0 for windows were chosen because of their statistical analysis capability.

### Results of the Questionnaires

From the questionnaires, we found that almost 84% of the students cannot differentiate between the Japanese words of AKUSENTO. We also found that almost 60% of the students have difficulties in listening to TANON, CHOUON, and SOKUON whereas the students who face hearing difficulties in SEION and DAKUON were 41%. This data is shown in Table 2.

*Table 2: The difficulties faced by Malaysian students in learning Japanese language.*

Category	Difficulty in Listening (%)
AKUSENTO	83.93
TANON, CHOUON, & SOKUON	59.82
SEION & DAKUON	41.07

The following quotes were taken from the questionnaires:

*“Good for listening practice”*

*“Graphic annotation is helpful”*

*“It gives me the knowledge on how to catch the proper pronunciation when listening”*

*“Very effective and will be able to speed up the learning process”*

*“Should be able to record our own voices so that we can know where we went wrong”*

*“Design a section for the user to key in the word that he doesn’t know how to pronounce”*

*“It will be better if this software can provide the user pronunciation after listening, after we listen and pronounce the word, the computer will correct our mistakes”*

### Pretest and Posttest findings

Results of the pretest and posttest for JCALL users who used the AGA (GG) and JCALL users who did not use the AGA (NG) showed that the students improved after using the JCALL courseware. The pretest mean score was 27.57 (out of a possible 35) and the posttest mean score was 30.76 (out of a possible 35) showing that the students have increased their score by approximately 9.1% after an hour of using the JCALL courseware (see Table 3)

Table 3: Comparison between the mean scores for listening test for Graphical Group (GG) and Normal Group (NG) users

	Group of	Sect. One*	Sect. Two	Sect. Three	Total Scores
Pretest	GG	6.71	10.95	9.86	27.52
	NG	6.39	10.93	10.30	27.62
Posttest	GG	8.63	11.61	10.98	31.22
	NG	8.05	11.30	10.95	30.30

\*Only 11 questions were calculated in this section. The rest of sections were calculated based on 12 questions.

If we look at the data based on the categories in Table 3, we find that the NG students' mean scores increased about 15.09%, 3.08% and 5.42% in the AKUSENTO category, SEION, DAKUON, TANON, CHOUON, and SOKUON respectively as shown in the Figure 3.

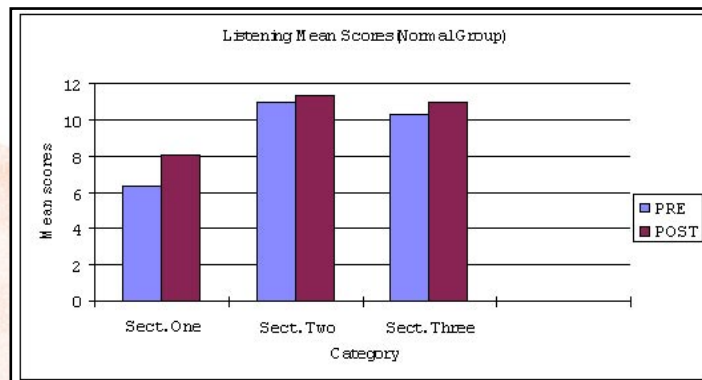


Figure 3: The comparison mean scores between pretest and posttest for NG group

Meanwhile, the results from the Graphical Group (GG) showed that the mean scores in section one (AKUSENTO) have increased as much as 17.45% from 6.71 to 8.05 points. Those in section two (SEION & DAKUON) and section three (TANON, CHOUON, & SOKUON) have increased by 5.50% and 9.33% respectively (see Figure 4).

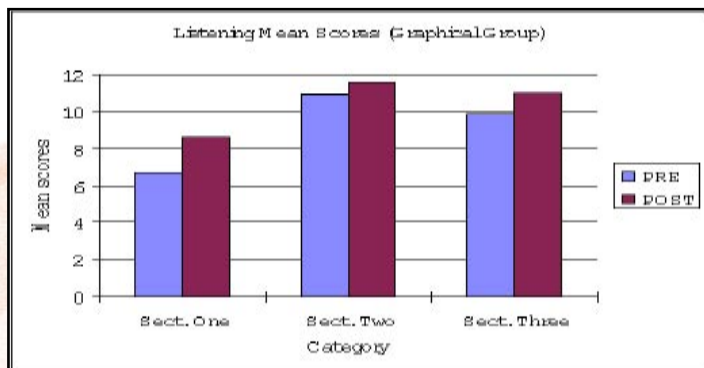


Figure 4: *The comparison mean scores between pretest and posttest for GG group*

If we compare the performances of the Graphical Group (GG) and the Normal Group (NG), we find that students who used JCALL with AGA have performed better than the students who used the JCALL without AGA as explained in Figure 5. For example, the students from GG have scored 0.47 point higher than the NG students in Section Three (TANON, CHOUON, & SOKUON). We also found that the improvement of the category SEION and DAKUON was low among the three categories. GG group and NG group students did better performance in the category AKUSENTO.

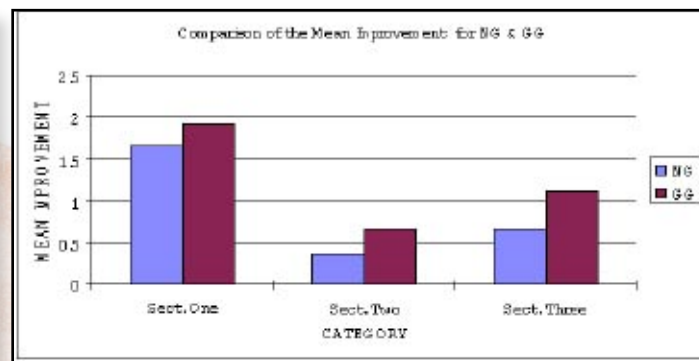


Figure 5: *Comparison of the mean-scores improvements between the GG group and the NG group*

An analysis of variance applied to the scores for the improvement showed a significant effect for JCALL with AGA compared to JCALL without AGA ( $F(55,55)=1.75, p<0.05$ ;  $t(110)=1.70, p<0.1$ ) as shown in Figure 6.



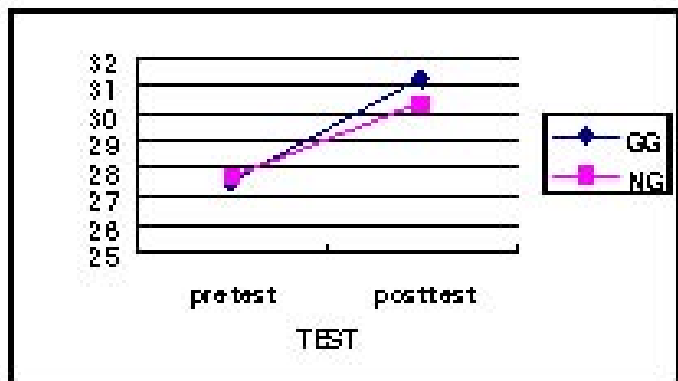


Figure 6: Mean scores for the GG and NG in the listening test: pretest and posttest.

In Table 4, means improvement (posttest-pretest), Standard Deviation for means improvement, and the number of samples are presented. A one way analysis of variance (ANOVA) shows a significant difference in JCALL with AGA compared to JCALL without AGA in the AKUSENTO section ( $F(56,56)=1.88, p<0.05$ ). The TANON, CHOUON and SOKUON sections ( $t(110)=1.63, p>0.05$ ) and the SEION and DAKUON sections ( $t(110)=1.50, p>0.05$ ) show little difference between the GG and the NG.

Table 4: Comparison of statistical data of listening test (Overall & sections) for NN & GG

Group	Mean Improvement	Std. Deviation	F test	t test
GG	3.6964	3.5824	1.75	1.70
NN	2.6786	2.7043		
GG sec1	1.9107	2.8302	1.88	0.53
NN sec1	1.6607	2.0651		
GG sec2	0.6607	0.9200	1.40	1.50
NN sec2	0.3750	1.0882		
GG sec3	1.1250	1.6521	1.26	1.63
NN sec3	0.6429	1.4700		

## Discussion

I have reported that there were substantial increases from pretest to posttest scores for GG students compared to relatively smaller increases for NG students in the area of-learning to listen. I have also reported that there were increases from pretest to posttest scores for the three categories, but only the category AKUSENTO showed the statistically significant in the listening learning. It is clear from the graph in figure 6 that AGA feature has an impact on the learning of Japanese listening. This is may be those students who used JCALL coupled with

AGA feature is informed with external information in learning a word by means of the picture or image on the display. The students who used JCALL without the AGA feature received no external information about their learning and for this reason may well have been less motivated in learning than the control group students. What do these findings offer professionals who avidly support the use of AGA in learning Japanese language? This study was designed to examine the complementary role that AGA might play in the learning of listening. Therefore, the results that AGA does not have a major effect on the listening learning in the category SEION and DAKUON and the category TANON, CHOUON and SOKUON should not be surprising. These may be partly due to the relatively small number of words tested (11 pairs of AKUSENTO words, 12 pairs of SEION and DAKUON words, and 12 pairs of TANON, CHOUON and SOKUON words) and used by the students in the pretest and posttest. Additional investigations in similar academic settings with similar controlled factors with the use of AGA need to be conducted to see if such findings are consistent.

## Conclusion

This project tested two JCALL program, one designed with the Animated Graphical Annotation (AGA) feature, and the other without to test whether AGA was effective in helping Japanese language learners to improve their listening and pronunciation.. In particular, the experiment was meant to test the relative effectiveness of JCALL designed using the AGA feature in the AKUSENTO(アクセント), SEION and DAKUON (清音&濁音) and TANON, CHOUON, and SOKUON (短音、長音&促音)。

The results have convinced us that using the AGA when designing CALL is to some extent effective and useful for listening acquisition. Still, we feel that this project has contributed in some small way to our knowledge of what makes CALL more effective and useful and we hope that this study will stimulate others to undertake projects of a similar nature. In the future, we plan to improve the JCALL by integrating the AGA feature with the Visual Feedback (FD), and voice recognition features, especially in the learning of pronunciation.

## References

- De Bot, K. (1983) "Visual feedback of intonation I: Effectiveness and induced practice behavior," *Language and Speech*, 26, 331-350.
- Duncan Cramer(1998). *Fundamental Statistics for Social Research: Step-by-step calculations and computer techniques using SPSS for windows*. Routledge
- Hew, S.H & Mitsuru, Ohki (2001) A study of the effectiveness and usefulness of Animated Graphical Annotation in Japanese CALL. *ReCALL* 13(2), 129-142
- Levy, Michael(1997). *Computer-Assisted Language Learning: Context and Conceptualization*. Oxford: Clarendon Press.
- Pennington, Martha C.(1996) *The Power of the Computer in Language Education*. The Power of CALL. 1-14 Houston:Athelstan.
- Sasot, Albert and Suau, Jaume. (2000) "Improving Teaching materials: The structuring of learning, the interrelationship of Information and the Search for Higher Levels of Interactivity." *Interactive Educational Multimedia*, 1, 35-46.
- NHK放送文化研究所。(2000)「日本語発音アクセント辞典」日本放送出版協会。