The Process of Language Learning
Seen in the Use of Time-creating Devices in Speaking

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This paper tries to see the process of oral language learning by exploring how the nature and the use of unfilled/filled pauses and other time-creating devices change over time, and by comparing the patterns used by learners of different proficiencies. First, learners' pauses are quantitatively examined by pause/time ratio, and then qualitatively studied to see individual differences. Unfilled pauses seem to have been gradually replaced with other time-creating devices, and the locations of pauses were seen to be different among different proficiency learners. Pauses and other time-creating devices are also used in effective ways other than as problem-solving devices. The author proposes that the use of those devices for language retrieval difficulties could be useful for language learning, not just as markers of language disfluency or deficiency.

1. Introduction
One of the most challenging aspects of language learning in Japan could be learners' oral language development, especially fluency, which has been often neglected at many secondary schools. Accuracy, which tends to be highlighted for second language learning due to the need for entrance examinations, does not in itself show whole language competence. Fluency often suffers in comparison by emphasizing accuracy owing to the trade-off between them (Skehan, 1998). There is a huge range in fluency among learners who have similar proficiency test scores (Iwai, 2007).

In my previous research (Nakamura, 2007a) on development of learners' language production before and after debate tasks in terms of fluency, accuracy, and complexity, students' language reformulation and improvisation were often seen during debate. At the same time students produced more unfilled and filled pauses and used time-creating devices such as repetitions and self-repairs, which are often used as measures of fluency. I would like to focus on these features in this study. They are usually labeled as language disfluency or deficiency and thus they should be reduced. From a different angle in the view of Faerch and Kasper (1983), they can be classified as one group of communication strategies. This paper studies the process of oral language learning, focusing on learners' use of unfilled/filled pauses and time-creating devices.
2. Literature Review

Some research has reported on problems of management in L2 communication. Skehan (2001) assessed task difficulty with pauses and filled hesitations on fluency. Ortega (1999) examined the effect of planning on focus on form with type-token ratio to measure lexical density. Both Skehan and Ortega regard filled hesitations as markers of disfluency. Dörnyei and Kormos (1998) investigated problem-solving mechanisms in L2 communication using unfilled/filled pauses and repetitions. They consider self-initiated correction and repair as deficiencies revealed by the process of monitoring. On the other hand, I. Nakamura (2006) takes silence, repetition, code switching, overlapping and so on as potential signs of stuckness in conversation, and observes how speakers are capable of getting unstuck by confirmation, elaboration, other/self-initiated repair, and formulation.

Another perspective considered to be related to this area is research by Johnson (1996), in which Anderson’s (1982) model of process of a progression from declarative to procedural knowledge was examined. Declarative knowledge is explained as ‘knowing that’, which is explicitly taught knowledge such as grammar and vocabulary, and procedural knowledge as ‘knowing how’, which is usable language knowledge such as speaking and writing. Johnson mentions as follows:

This distinction (between ‘knowing that’ and ‘knowing how’) will cause no problems to most language teachers, who know well that knowing about English grammar is quite a different proposition from being able to use it. (Johnson, 1996, p. 82, parentheses added).

Johnson also suggests the possibility of the process of a progression from procedural to declarative, introducing McLaughlin’s (1990) research. According to McLaughlin, the development of automaticity and the process of restructuring are important. Practice can lead to improvement in performance, but automated sub-skills create conditions for restructuring.

Then what kinds of tasks are useful for learners to be able to use the language and give them more chances to proceduralize and restructure their language? Bygate and Samuda (2005) suggest that “a common learning and teaching problem is to get learners to integrate knowledge that is available to them into their active language use” (p. 37). Strategic planning helps speakers to prepare broader conceptual plans and access language stores, which might be easily lost in the light of actual utterances. On the other hand, on-line planning seems more finely tuned to learners’ needs of specific upcoming utterances, but broader knowledge structures or language knowledge may not be accessible. They suggest that combining both strategic and on-line planning is one solution to this problem. Learners’ experience of task processing with both strategic and on-line planning seems to help proceduralize the language knowledge. The modified debate tasks I used (see Nakamura, 2007a) and the Poster Carousel (see Lynch and Maclean, 2001), a kind of poster session, are such examples that require both strategic and on-line planning.
Then how could learners' proceduralized language knowledge be measured? Raupach (1987) tried to examine a speaker's mental processes from declarative to procedural. He analyzed speech production, using pause/time ratio, mean pause length, mean length of runs, and number of hesitations as measures, which were specified as 'pausology' by O'Connell and Kowal (1980). Butterworth (1980) inferred the nature of the internal representations, Plan and Planning, from the pattern of pauses, and found that juncture pauses occurred more in planning phases than execution phases. He suggests that juncture pauses before unpredictable words might be used for lexical selection. Though both Raupach and Butterworth do not see individual differences, Larsen-Freeman (2006) investigates interindividual variability and intraindividual variability in the data. Even though the quantitative result shows a gradual improvement, individual data does not always follow the same path. According to Thelen and Bates (2003, cited in Larsen-Freeman, 2006), developmental change seems "not so much the stage-like progression of new accomplishments as the waxing and waning of patterns" (p. 615). Some patterns are stable and others ephemeral. Larsen-Freeman goes one step further and interprets the view as follows:

Intrinsic to this view is the idea that individual developmental paths, each with all its variation, may be quite different from one another, even though in a 'grand sweep' view these developmental paths are quite similar. (p. 615)

3. Study
In my previous research (Nakamura, 2007a), I found that the number of pauses per c-unit produced by students in unplanned tasks showed a consistent decrease over time regardless of task types. On the other hand, other time-creating devices such as filled pauses, repetitions, and self-repairs increased at first and then decreased. This was clearly seen among experienced students in planned tasks (Figure 1). So there might be hidden keys to account for such positive aspects of language learning. Was their language knowledge proceduralized through task-based language learning?

Now I would like to examine the same data in my last research by pause/time ratio, one of Raupach's measures, the percentage of overall time spent in pausing, and also qualitatively see how the patterns of pauses change over time. I would also like to see in my data if this way of measuring really shows learners' mental processes from declarative to procedural.¹

3.1. Participants
The participants were seven high school students: three experienced students and four less-experienced students.

![Figure 1. The use of time-creating devices in planned tasks](image-url)
experienced students, who studied through task-based syllabus for two years and one returnee from Wales, and four less-experienced students, who took this course for only one-school year. In this study I also add the data of one Korean student in the advanced level, who participated in the Poster Carousel, to see the nature and patterns of pauses and time-creating devices used by a high proficiency learner.

3.2. Hypotheses
How do the patterns of pauses and the use of other time-creating devices in learners' language production change over time? Learners' use of those devices may be different according to proficiency level. Then, how are the patterns of pauses and the use of other time-creating devices different by learners' proficiency levels?

Hypothesis 1
Pause/time ratio decreases while filled pauses and other time-creating devices increase.

Hypothesis 2
The location of pausing varies by learners' proficiency levels: low proficiency learners pause more in the middle of sentences than high proficiency learners.

Hypothesis 3
Low proficiency learners tend to use more unfilled pauses while higher proficiency learners use other time-creating devices more effectively for rhetorical purposes, clarifications, understanding responses, and so on.

3.3. Procedure
First, learners' transcribed data are marked/coded according to time-creating devices such as unfilled/filled pauses, repetitions, and self-repairs. Then, the pause/time ratios in three tasks are compared and the transition of the use of time-creating devices is seen. Locations of pauses and the use of time-creating devices by learners with different proficiency levels are qualitatively examined in learners' transcribed data.

Table 1. Pause/time ratio of individual students

<table>
<thead>
<tr>
<th>Student</th>
<th>Speech (Sep.01)</th>
<th>Review (Oct. 01)</th>
<th>Negotiation (Jan. 02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.14</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>2</td>
<td>0.49</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td>3</td>
<td>0.06</td>
<td>0.00</td>
<td>0.11</td>
</tr>
<tr>
<td>4</td>
<td>0.61</td>
<td>0.17</td>
<td>0.22</td>
</tr>
<tr>
<td>5</td>
<td>0.15</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.39</td>
<td>0.33</td>
<td>0.07</td>
</tr>
<tr>
<td>7</td>
<td>0.36</td>
<td>0.13</td>
<td>0.29</td>
</tr>
<tr>
<td>Average</td>
<td>0.31</td>
<td>0.17</td>
<td>0.15</td>
</tr>
</tbody>
</table>

$t$ test between Sep. and Jan.: $t(5)=2.556$, $p=0.051$
4. Result  
Table 1 shows seven students’ pause/time ratios in three tasks, before, between, and after debate tasks (S1-S3: experienced, S4-S7: less-experienced students). If we saw t-test between September and January, which shows almost significant difference, and the average ratios, which gradually decreased, students’ language knowledge might look proceduralized. However, the ratios of each student show individual differences.

5. Analysis  
The following are analyses of the nature of pauses in the individual transcribed data.

Example 1 (S4): Improvised speech (Entrance ceremony)  

(1) (when) This (1) school (1) this school (1) song (↑ (↑) (↑) heard for the first  
(2) time, I am *was* very impressed. (12) Sometimes I (7) I thought I (1)  
(3) enjoy(ed) (1) my school life. And (1) my friends always talk to me. And (7)  
(4) and (1) **umm** I I’ rant study hard. (11) **umm** (18) I I love *I like* my school.  
(5) That’s all. (SR: 0.37, TD: 1.67)

Notes  
(sec): length of unﬁlled pausing time, Bold: repetitions, **Bold italics:** self corrections,  
HG italic: errors (missing words) and **phonological errors,** **umm** filled pauses,  
italics: other-initiated modiﬁcation, italics: L1 transfer (translation), (()): description  
or explanation, [[: overlapping, SR: speech rate, TD: time-creating devices per c-unit,  
underline: prefabricated chunks  

This is an improvised speech with the title of *Entrance ceremony* given by student 4  
(S4) in September. She is searching for the appropriate words in her database. She  
finds ‘this’ and ‘school’ (line 1), and then repeats them in combination without pausing.  
Another finding is the locations of pausing. S4 often pauses in the middle of the  
sentences, which is likely to show her searching for words.

Example 2 (S4): Negotiation task  

(6) S4: What do you do in your future?  
(7) S3: I want to be an artist, so just **eh** can I take Art in at university.  
(8) S4: **Umm,** I (2) I don’t agree with you, because **umm** (1) your  
(9) ability of nanteyunkana? *(What do we say?)* Noryokuwa *(ability of)*  
(10) artist*no?* (gets the word) (4) Your *ability of artistic* is *isn’t* top, so  
(11) ((cough)) **um** you you may not succeed *(in)* this.  
(12) S3: I don’t *I’m not* (a) top artist. That’s why I’m going to university and  
(13) study art, then I will be *(a)* top artist.  
(14) S4: *Nattoku shite shimau* *(I agree with this).* The now the world use use  
(15) *jana* *(mistake)* the *world is* **eh** (2) *don’t the world doesn’t need*  
(16) artist. So (3) so I think (2) I’m worried about you. (8) You may not  
(17) succeed, so I I want to (4), *nandattake keizaimi* *(what do we say for)*  
(18) ‘economics?’ ((gets the word)), I *want to learn, chigau chigau chigau*  
(19) *(no, no, no).* I think you should *learn economics.* (SR: 0.45, TD: 2.76)
This is an excerpt from an improvised negotiation task in January. S4 and S3 were told to negotiate with each other. S4 is supposed to be a mother, who is trying to persuade her daughter to change her mind about her future direction, and S3 a daughter, who is trying to persuade her mother to allow her to study art in university.

Here other tools are often seen to replace pausing such as code switching by L1 transfers in thinking aloud (lines 9-10, 14-15, 17-18). Some of them invite other modifications (lines 9, 17), and filled pauses and repetitions to gain time to formulate ideas. Even some of the pauses (lines 8, 16) are not just to search for words or forms, but to think of reasons, which is shown with the words 'because' and 'so'. My data suggest that pauses do not always show that the learner is utilizing declarative knowledge. Some show searching for ideas, as is often the case with native speakers, as well as searching for lexis and forms.

**Example 3 (S3): Improvised speech (School festival)**

(20) Actually, I've never joined school festival, *um* because *um* first year we
(21) didn't have a school festival, and second year .... So I don't know school
(22) festival for three years. But I heard that Norika song *sang* a song, and that
(23) was so good. And Maiko also sang. Everyone was great. Everyone had a good
(24) time. But I couldn't join. And (5) then I heard *um* the teachers *every home*
(25) class teachers in third grade joined the *um* school festival and they did
(26) Kapated. And that sounds pretty funny. I wanted to see. .... (2) And *um* I
(27) *before I came I came to this school, I thought school festival is like there*
(28) are lots of shops and students sell a lot of food, but this school they never do
(29) that, I think. So I want to do something, not only *um* singing a song. I want
(30) to do something else and *eh* (2) ABC high school is the *eh* (2) *this* school they
(31) never open the school to public. They open to A-B *ABC high school* students
(32) only. I think we should be more open to *join everyone everyone can join*, then
(33) that will be good. So my school festival experience is nothing but I will be *I*
(34) *will check* the video. It will be fun. (... omitted speech, SR: 1.51, TD: 0.64)

This is S3's (a returnee) improvised speech with the title of School festival. In this student's case none of the pauses seems to show word/form searching. The pauses in lines 24 and 26 are just before changing the topics, followed by self-repairs and repetitions, and after the pause in line 30 her criticism starts. The next pause occurs in line 30 just before the reformulation ('this school') of 'ABC high school', which emphasizes the meaning (see Kormos, 2000). One interesting aspect of this student's speaking style is the way of using repetitions: 'school festival', 'everyone', 'sang', 'a lot of', 'want to do something', and so on. Her speaking carries a certain rhythm with repetitions, that is, a kind of rhetorical effect.

**Example 4 (S3): Negotiation task**

(35) S3: *um* But if I learn economics and I take over your business, I will quit
(36) business and I will do want art. So it's impossible to learn economics and take over your business. (5) [Maybe you should ask my brother to
(38) S4: [Umm]
(39) S3: take your business.
(40) S4: Brother?
(41) S3: He likes economics, he said.
(42) S4: But but but now brother [um] brother is still young, so you should
(43) learn learn economics. And [um] (1) if you (8) [eh] (7) wakaran. Ah after
(44) (you) graduate a college, what will you do?
(45) S3: I still don't know but I’m going to (2) another country and study art
(46) and will be an artist. (7) Why do you want me to take over your
(47) business?  (SR: 1.37, TD: 0.42)

This excerpt is again from the negotiation task by S3 and S4. The pause in line 37 is for changing the direction of the story and the one in line 45 is for thinking of the content (where to go). The one in line 46 is for changing a role from defending to attacking (see Kormos, 2000). As a whole, it could be said there are almost no pauses searching for words/forms in S3's language production. S3 could be said to be of a high proficiency level in speaking judging from the nature of pauses and her repetition skills.

Example 5 (S8): Poster Carousel task (‘Sports’)

(48) S9: Hhhhh, [oh] really. [Eh] so this is tekondo?
(49) S8: =Ah, tekondo. Ah:::h, tekondo. What's the difference (.) between
(50) [judo and tekondo?]
(51) S8: =Oh, really=
(52) S9: =Yes, [ah] eh they are like (.) when they tackle they use legs but (.)
(53) S9: [Hu:::n]
(54) S8: ah:::hn, what can I say, tekondo is like kind of kicking skills, they
(55) S9: [Ah:::n]
(56) S8: have kicking skills.
(57) S9: So they don't use hands?=
(58) S8: =They use hands, but usually they use legs. [Their legs are much
(59) S9: [He:::eh],
(60) S8: more [stronger than hands]. hhh.
(61) S9: [ha:::h] it's interesting. [Ha:::h] (.) Next question. Um, (1) in

— 7 —
Example 5 is an excerpt from one advanced learner's (S8) language production talking about sports in the Poster Carousel. S8 rarely pauses but uses filled pauses instead. He often inserts lexicalized pauses, that is, filling words or more complex prefabricated chunks into his expressions, such as 'well', 'like', 'kind of', 'what can I say?' (lines 52, 54, 65). He sometimes repeats his interlocutor's words to show his understanding (lines 49, 65) and also reformulates his meaning in several different ways to make sure his interlocutor understands (lines 54, 56-8, 60-2).

Table 2 shows revised high school students' pause/time ratios limited to only word/form searching, which means that pauses for other purposes such as rhetorical use were excluded. Shadowed numbers show the change from Table 1. S1, S3, and S4 used pauses for other purposes besides word/form searching, and others used them mainly for word/form searching. However, pauses used by S2 and S6 gradually decreased while those by S5 and S7 did not decrease. This variation could indicate students' learning styles. Further studies on this relation are needed.

Another important finding is that unfilled pauses together with other time-creating devices gradually decreased (Figure 2). We can infer how other devices replaced unfilled pauses over time from this graph.

6. Conclusion
As we have seen in this paper, first of all, one of the findings is the relation between unfilled pauses and other time-creating devices. Unfilled pauses seem to have been gradually replaced with other time-creating devices, such as filled pauses, repetitions, and self-repairs over time. Altogether unfilled pauses and other time-creating devices were seen to gradually decrease. The second is the relation between the locations of pauses and learners' language proficiency. When learners search for words/forms, pauses tend to be located in the middle of the sentences, while for other purposes they are likely to be located at the beginning of the sentences. Finally, effective use of

Table 2. Revised pause/time ratios (Searching for words/forms)

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time-creating devices, such as for rhetorical purposes, clarifications, prefabricated chunks, and understanding responses, was observed in higher proficiency learners' language production.

Does the pause/time ratio really show mental processes? Are these devices really markers of language disfluency or deficiency? With all the facts we have seen in this paper, I would like to conclude that pauses and time-creating devices indicate more than non-proceduralized language knowledge. They could have potential for learning, in a different way from the accuracy-driven method. Most importantly, this learning phenomenon, in which learners tend to use lots of time-creating devices, might not be detrimental to, but facilitative of language learning. This is the very moment that task-based language learning could be the most effective. Larsen-Freeman (2006) argues as follows:

The messiness is not 'noise', but rather a natural part of dynamically emergent behavior assembled by the individual with a dynamic history of engaging in such tasks, with his or her own self-identified (or jointly identified) target of opportunities for growth (p. 615).

Notes
1. This study extends and deepens the discussion in my previous research (Nakamura, 2007b).

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References


