

## **Planning time effect on fluency, complexity and accuracy of L2 output**

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### **Abstract**

For more than a decade focus-on-form coupled with meaning-focused instruction has been placed high on the agenda of SLA research. Planning time and feedback are two methodological procedures that hold some promise for meeting such a concern in EFL/ESL classrooms. The present study addressed the first procedure, i.e., planning time, and investigated its effects on the fluency, complexity, and accuracy of L2 output across modalities. Thirty seven Iranian English majors produced three narratives for different episodes of a silent cartoon under three conditions: 1) oral reproduction with a 10-minute strategic planning, 2) oral reproduction without any pre-planning, and 3) writing a narrative with on-line planning. The results showed that strategic planning and modality have marked effects on fluency and accuracy of L2 output whilst neither improved output complexity. Strategic planning and written mode of task accomplishment are proposed as effective methodological procedures in task-based instructions in EFL classrooms.

**Key words:** focus on form, strategic planning time, modality, accuracy, complexity, fluency, task

## **1. Introduction**

Given that in task completion, meaning is usually attended to at the expense of form, planning time in the form of strategic or on-line can provide L2 speakers with an opportunity to plan what they are supposed to talk in terms of goals and sub-goals prior to speaking, freeing them from pressure in terms of processing load. This reduction of pressure on processing capacity is more likely to allow L2 speakers to attend to form in the formulation stage of language production. There is also the possibility that given time will provide learners with some ready-made plans for new situations.

## **2. Literature review**

Focusing predominantly on meaning in L2 instruction is what almost everyone attests to. But, the question is: Does being involved in purely communicative activities which concern pragmatic meaning suffice to develop the interlanguage system of L2 learners? There are now cogent arguments for conscious attention to form as an indispensable factor for acquisition (Schmidt, 2001). Pedagogical interventions appear to be a key factor for channeling the attention of L2 learners for 'noticing' specific forms of language. The way focus on form has to be operationalized to benefit L2 learners is an issue far from settled to date, though there is a consensus as to its positive effect in overcoming accuracy problems of L2 learners.

Given that in task-based teaching, L2 development might suffer as a result of concern with meaning negotiation, learners have to be led to pay attention to grammatical structures which may seem the most redundant features of language. To meet the accuracy challenge in negotiation of meaning in L2 classrooms and task-based teaching, in particular, there is a need to employ methodological options that can lead students to attend to

form in the context of meaningful use of language. Ellis (2005) stresses two of these options which can contribute to accuracy in the context of task-based pedagogy: Planning time, in the form of strategic or on-line planning, and corrective feedback during task performance. Provided with planning time, L2 learners will be able to have access to their declarative knowledge and monitor forms for L2 production. Deprived of such an opportunity, L2 learners might ignore such a knowledge, which needs controlled processing, and attend to meaning which is of higher value in the context of task performance. Pressed to communicate, learners run the risk of fostering lexicalized language production, strategic language use (Skehan, 1996), operating an exemplar-based system rather than a dual-mode system (Carr & Curran, 1994), and fossilization. Declarative knowledge, which contrasts with procedural knowledge, is “factual knowledge” such as knowing that certain verbs in English take *-d* or *-ed* when they are used in past tense. Procedural knowledge is about *how to do things without having to think about the underlying rules*. One who is in possession of procedural knowledge of past tense can add *-d* or *-ed* to verbs with no thinking about the way the rule functions. The transformation of declarative knowledge into procedural knowledge is a gradual process which involves a transition from controlled processing to automatic processing (Shiffrin & Schneider, 1984). While skill-building theorists (e.g., DeKeyser, 1998) acknowledge that through practice rule-based representation of language is subject to proceduralization, some second language acquisition theorists (e.g., N. Ellis, 1998) downplaying such a transition, claim that implicit knowledge develops out of meaningful language input. Reviews of L2 studies (e.g., Norris & Ortega, 2000) show that explicit form instruction is significantly effective in developing L2 system. Engaging in language production by investing effort and attention to use some rules will help language learners speed up the time of processing operation in the future uses.

### 3. Planning time and L2 Production

Ellis (1987) conducted a study in which he studied the effects of planning time on the accuracy of three different forms of past tense – the regular past, the irregular past, and the copula. To this purpose, he used two tasks under three different conditions for eliciting L2 output. Under condition 1, participants had to write a story for a set of pictures. Under condition 2, the same participants were asked to speak a story about the same pictures. Under condition 3, however, the same participants had to speak a story for a new set of picture series. Findings showed that there were statistically significant differences between conditions 1 and 2 and conditions 2 and 3 in terms of accuracy of past tense as a single unit. When the regular and the irregular past tense were taken into consideration separately, the difference appeared to be statistically significant between conditions 1 and 2 and between conditions 2 and 3. In contrast, there was no statistically significant difference between three conditions of L2 production of learners in terms of the irregular past tense like ‘went’. Ellis (1987) related such a pattern to two different underlying language systems upon which L2 speakers draw in producing the regular and irregular past tense. He proposed that for producing the irregular past tense, the speaker has to draw on a lexical basis. For the regular past tense, in contrast, the speaker has to draw on a rule-based system. Different planning conditions do not seem to affect the retrieval of ready-made exemplars of the irregular past tense.

Crookes (1989) conducted a research in which Japanese learners of English were required to perform two monologic production tasks under two different planning conditions. Under one condition, participants had no strategic time while under the second condition they were given 10 minutes as pre-task planning time. They were instructed to focus mainly on words, phrases, and ideas. Under pre-task planning time they were reported to produce more complex language than the condition under which participants

were deprived of pre-task planning time. Crookes, however, did not find a statistically significant difference between two groups with regard to accuracy.

Foster and Skehan (1996) found that speech produced under planned conditions was significantly more fluent, more accurate, and more complex than speech produced under unplanned conditions. Three tasks including a personal information exchange task, a narrative task and a decision-making task were performed by three different groups under three different planning conditions. Unplanning, unguided 10-minute planning, and guided 10-minute planning were conditions under which the groups had to perform. The groups who had 10 minutes to plan, i.e., both 'detailed planning' and 'undetailed planning' conditions, paused significantly less frequently and their silence was significantly smaller than those of the group who performed under the unplanning condition. Speech produced under planned conditions was also more complex than that of unplanned. One of their intriguing findings was that planning had a stronger effect for the narrative and decision-making tasks than for the personal task. This finding sheds light upon the importance of task design in the production of complex speech. As Robinson (2001) observes some tasks might urge L2 speakers to prioritize fluency while some others might work vice versa. He further argues that complex tasks would elicit less fluent, but more accurate and complex production. It is quite safe to claim that planning is of great effect as a 'resource-depleting' dimension of task complexity in providing L2 speakers to spend part of their attentional and memory resources to attend to accuracy and complexity. But, the point is that less complex tasks are not assumed to have the potential to direct the attentional resources available to L2 speakers. Increasing functional demands through increasing the 'resource-directing' dimensions (+/- here-and-now, +/- few elements, +/- no reasoning demands) and planning, which is the resource-depleting dimension

of task complexity (Robinson, 2001) are assumed to push for more complex language and provide an opportunity for doing so. Foster and Skehan (1996) also reported that L2 speakers were able to produce more accurate language under two planning conditions.

The effect of different amounts of planning time on L2 production was investigated by Mehnert (1998). In this study, 4 groups of L2 speakers (learners of German) performed two tasks each. The 3 experimental groups had 1, 5, and 10 minutes of planning time available respectively while the control group had no planning time. Planning time was reported to have significantly positive effects on fluency, complexity and accuracy.

In another research, Yuan and Ellis (2003) studied the impact of strategic and on-line planning on fluency, complexity, and accuracy of L2 learners' oral narrative. In their study, under three levels of planning conditions (no planning, pre-task planning, and on-line planning), 3 groups (Chinese learners of English) were required to narrate a story orally based on a picture composition. They reported statistically significant effects for pre-task planning on both grammatical complexity and accuracy. Neither pre-task planning nor on-line planning benefited fluency or lexical variety. Based on the results of their study they suggested that on-line planning has the potential to enable L2 speakers to gain access to their L2 knowledge, particularly their explicit grammar knowledge, and produce more accurate language. They concluded that under any kind of planning, L2 speakers engage in cognitive activities which contribute to more complex language production. They also claimed that the principal competition is between fluency and accuracy. This claim runs counter to Skehan and Foster (1997) who claimed the primary competition is between accuracy and complexity and agrees with Wendel (1997, cited in Ellis, 2003) who argued for the primary competition being between fluency and accuracy.

#### 4. Modality and task performance

Another important task performance condition that falls under communicative stress is modality of task performance. As Skehan (1996) states “*modality* simply concerns the speaking/writing, and listening/reading contrast” (p. 52, emphasis in the original). Spoken tasks, particularly those which have to be performed under time pressure, pose cognitive difficulty in deploying attention. It is assumed to be the case simply because they “permit less time to be allocated to on-line planning and attention to form” (Skehan, 1998, p. 142). Prioritizing fluency pushes L2 speakers to meet primarily fluency demand and consequently leave accuracy as the last concern. In performing written tasks, however, L2 speakers are assumed to benefit from on-line planning to attend both content and form.

To our knowledge, just one study (Ellis, 1987) has compared the impact of modality of task performance on language accuracy. Ellis compared the accuracy of a written narrative performed with no time pressure (on-line planning) with two oral narratives (one with strategic planning and the other with no-planning). Levels of accuracy of English past tense were higher in the written narrative than those in two oral narratives.

The model proposed for writing by Kellog (1996) is quite similar to Levelt’s (1989) model of speech production. Kellog (1996) distinguishes three principal phases for text production: formulation, execution, and monitoring. In formulization phase, goals for the writing are established and the lexical units and syntactic frames needed for encoding the ideas which are to be manifested in the text are selected. This phase of text production is equivalent to two phases of speech production whereby speech goals are set and phonological, grammatical, and lexical features appropriate to pre-set goals are selected. In execution phase, the output from the previous phase is “converted into production schema for the appropriate motor system involved (e.g., handwriting or typing), and executing or the actual

production of sentences” (Ellis & Yuan, 2004, p. 62). And in monitoring phase, the writer reads and edits the text. On-line planning is assumed to enable the writer to monitor the text before or after execution phase whereby s/he can attend to linguistic errors, text organization, or both at the same time. It has to be stressed that written tasks can benefit L2 learners with low proficiency a lot. Real-time processing is agreed to stress L2 learners out whilst writing mode is assumed to alleviate processing load and anxiety to a considerable extent and contribute to monitoring L2 grammatical features and eliciting various lexical items.

### **5. Research Questions**

This study undertakes to examine the effect of both planning and modality of task completion on the fluency, complexity and accuracy of L2 output. The research questions include:

Is fluency in L2 oral production a function of pre-task planning time?

Are L2 output complexity and accuracy affected by planning time condition (strategic vs. online vs. no planning) across modalities?

### **6. Participants**

Participants for the present study were 37 English majors at two universities (Islamic Azad University and Payam-e-Nour University) in Ardebil with ages ranging between 21 and 26. They were selected out of a pool of 62 English majors based on their scores on Nelson test and their fluency on a 5-minute oral production. The selected participants' scores on Nelson test ranged between 50 and 60 and their fluency index on the spoken narrative ranged between 10 and 15 (the number of frequency of repetitions, false starts, reformulations, and replacements).



**Procedure**

Participants were required to watch a 7-minute episode of the cartoon *Tom and Jerry*. This cartoon was chosen to serve as the base for the narrative task because (a) it has got short episodes to be handled with convenience for the research purpose; (b) it is silent, avoiding the problem of assessing the linguistic complexity and listening comprehension skills; (c) it almost lacks culturally-biased points.

The participants were told that when the episode came to its end, they could spend 10 minutes on the organization of the content and accuracy of a 5-minute oral narration of the episode. They were provided with pieces of papers to provide an outline of what they were going to talk about at the end of the 10-minute pre-task planning time. They were also informed that their notes would be taken away before they began performing the task. (The idea of setting the time at 5 minutes originated from the pilot run of the same task completion with participants from the same pool who came to get the job done in 4 up to 6 minutes). Participants' narrations were audio taped at the laboratory. This is referred to as the strategic planning oral narrative condition.

After a short break the participants were asked to watch the second episode of the same cartoon. They were allowed to take notes during their watching. Immediately when the episode ended, participants having no time to plan strategically but free to take advantage of online planning during narration, were assigned to complete their written narration in a maximum of 12 minutes (during the pilot run of the study participants came to implement the task in 10 up to 14 minutes). This is referred to as the online planning written mode condition.

In the last stage, the third episode of the same cartoon was played to them. This time they had no strategic planning. They had to start narrating their accounts of the episode as soon as the episode came to its end. They

had to implement the task in 5 minutes. This is referred to as the no planning oral mode condition. The narratives were audio-taped.

Table 1 shows the details of the three conditions.

**Table 1.** Task performance conditions

Condition	Modality	Time to perform the task
Pre-planning	Oral	5 minutes
Online planning	Written	12 minutes
No planning	Oral	5 minutes

### Data coding

The audio taped data were transcribed and coded to measure the syntactic fluency, complexity and accuracy. The written data were also coded for syntactic complexity and accuracy but not for fluency.

Following Skehan and Foster (1999) fluency was measured by counting the number of *repetitions* (repetition of the same word or phrase), *false starts* (utterances that are abandoned before being completed), *reformulations* (phrases or clauses that are repeated with some modification either to syntax, morphology, or word order), and *replacements* (substituting one lexical item for another). In this way, lower means indicate less number of *repetitions*, *false starts*, *reformulations* and *replacements*, and consequently better performance. As it was mentioned at the very first paragraph of this section fluency was measured for oral language production not for the written one.

The complexity of participants' output was measured by dividing the number of clauses by the number of T-units. Assuming that every single T-unit contains only one clause, the minimum value of 1 implies an absolute lack of complexity in performance.

Accuracy was measured by calculating the number of *error-free clauses* as a percentage of the total number of clauses. Put differently, accuracy

measurement was an index showing what percentage of clauses produced by participants of the study was free from any grammatical error. So here, low means indicate less number of errors and consequently better performance.

### Results

Table 2 shows means and standard deviations for fluency (both as a single variable and in terms of its components, i.e., *repetition*, *false starts*, *reformulations*, *replacements*) syntactic complexity and accuracy across the two planned and unplanned conditions. As the table shows, participants produced more fluent language when they were provided with strategic planning prior to implementing the task than when they were deprived of such planning, as there were less repetitions, false starts, reformulations and replacements.

**Table 2.** Descriptive statistics for the participants' fluency in oral narratives across two conditions

	Strategic planning		No planning	
	M	SD	M	SD
Fluency	0.85	1.79	2.56	4.52
Repetition	1.91	2.86	5.32	7.51
False starts	0.12	0.33	0.54	0.98
Reformulations	1.06	1.48	3.54	3.02
Replacements	0.32	0.77	0.78	1.03

Addressing question number 1, a t-tests were run to compare fluency and its components in the two planned and unplanned conditions. Table 3 below shows the results.

**Table 3.** Matched t-test results for fluency and its four components in planned and unplanned conditions

	Fluency	Repetitions	False starts	Reformulations	Replacements
Unplanned	2.56	5.32	0.59	3.54	0.78
Planned	0.85	1.19	0.12	1.06	0.32
t-values	4.88*	4.91*	0.68	3.57*	0.66

\*Significant at  $p < .01$

As can be seen, performance is much better in the planned condition for fluency as a whole and also for repetitions and reformulations. There are also less false starts and replacements in the planned condition though not to a significant degree.

In the next stage, addressing question number 2, attempt was made to see if complexity and accuracy vary based on the planning condition (strategic and online). Table 4 below shows the descriptive statistics for the participants' output complexity and accuracy across three conditions and two modalities.

**Table 4.** Descriptive statistics for the participants' output complexity and accuracy across three conditions

	Strategic planning		On-line planning		No planning	
	(Oral narrative)		(Written narrative)		(Oral narrative)	
	M	SD	M	SD	M	SD
Complexity	1.46	0.11	1.31	0.12	1.28	0.11
Accuracy	46%	22.98	49%	27.08	28%	16.39

As for complexity, the means do not favor any condition (the means range between 1.28 and 1.46). But as for accuracy, in the planned (strategic

planning oral modality and online planning written modality) conditions learners produced more accurate language than the unplanned condition. This is the case because under real-time pressure attending to accuracy is not an easy task. To see whether these differences are significant or not, two separate repeated measures ANOVAs were conducted for complexity and accuracy. As Table 5 below shows, for accuracy, there is a significant difference between the three conditions. Post-hoc test results indicated that there is a statistically significant difference between online planning written modality (Mean = 49) and unplanned oral modality (Mean = 28) conditions; also there is a significant difference between strategic planning oral modality (Mean = 46) and unplanned oral modality (Mean = 28) conditions. There was no statistically significant difference between the accuracy of L2 production in online planning written modality (Mean = 49) and strategic planning oral modality (Mean = 46) conditions.

**Table 5.** Repeated measures ANOVA results for complexity and accuracy across conditions and modalities

Condition	Modality	Complexity	Accuracy
Online planning	Written	1.13	49 %
Planned	Oral	1.14	46%
Unplanned	Oral	1.16	28 %
	F values	0.791	18.19

\*Significant at  $p < .01$

As for complexity, measured by calculating the number of clauses per T-unit, no significant effect was found on L2 production as a result of the three different task performance conditions. Results obtained are in line with our predictions. Since tasks were simple monologic narratives, L2 learners were not pushed for producing complex structures. As for modality, since both in

the unplanned oral modality task and the writing task, there was no strategic planning, one can attribute the significantly better performance in the written task to the modality. One may conclude that the planning inherent in the writing task has led to this result.

## 7. Discussion

In general, the present study addressed the effects of pre-planning time and task completion modality (written versus oral) on L2 output. Dependent variables measured were fluency (operationalized as the number of repetitions, false starts, reformulations, and replacements), accuracy (operationalized as the percentage of error-free clauses in the total number of clauses), and complexity (operationalized as the number of clauses divided by the number of T-units).

Research question 1 addressed the effect of pre-task planning on the fluency of L2 learners' output in oral narrative task. The results revealed that when learners are given some time to organize what they are to talk, there is a statistically significant improvement in terms of fluency. This finding lends more support for researches that found positive effects for pre-planning in terms of fluency (e.g., Foster & Skehan, 1996, 1998; Mehnert, 1998; Skehan & Foster, 1997; Yuan & Ellis, 2003).

It should be noted that there is a strong theoretical base for the influence of pre-planning time on fluency. With pre-planning time, L2 learners can plan for the situation ahead and reduce the processing load. The reason that L1 speakers appear less dysfluent than L2 speakers is that they process planning subconsciously and automatically as a result of ready-made plans which are available for frequently occurring linguistic situations (Færch & Kasper, 1983). Consequently, they do not need to spend that much time to plan in real-time pressure or replan as a result of deficiency in the original one. L2 speakers, in contrast, lack such a ready-made plan. Then planning

time gives them an opportunity to provide themselves with newly made plans which reduces processing load during task completion and reduces the number of dysfluencies.

It can also be explained by hypothesizing that pre-planning enables L2 learners to set goals and give an organization to the propositional content of what they are to encode. A clear goal and well-organized content reduces processing load even when the learner has to speak in real-time pressure following strategic planning. Such an opportunity may also increase L2 speakers' confidence during task performance (Ellis & Yuan, 2004).

The results also revealed that pre-planning time increased the accuracy of learners' L2 production. The effect of pre-planning time on accuracy has not been a stable pattern in the bulk of research that has attempted to find a relationship between these two variables. Some studies (e.g., Foster & Skehan, 1996; Mehnert, 1998; Skehan & Foster, 1997) found improvements in accuracy as a result of planning time before task completion while some others (e.g., Crookes, 1989; Ortega, 1999, Wigglesworth, 1997) did not find statistically significant differences to strengthen this claim. There are also some other studies (e.g., Yuan & Ellis, 2003) which suggest on-line planning as an effective methodological manipulation whereby accuracy increases.

Based on the results obtained for accuracy in the present study, it can be hypothesized that pre-task planning allows L2 learners to focus on form and improve the accuracy of their L2 when they carry out a task. Processing load that is reduced as a result of propositional organization of the task can be another effective factor for accuracy. Drawing on these results and previous studies it should be noted that in on-line planning which is provided through writing, even when writing is carried out in real time pressure, L2 speakers can attend to form and edit their production before and after execution stage.

However, statistical analyses did not reveal any significant effect for L2 complexity as a result of pre-planning task or on-line planning inherent in L2

written production. These findings, which are consistent with the predictions of the study, can be explained by the design of tasks involved. Monologic tasks like cartoon narratives, particularly when they have straightforward structure of events, are not assumed to prompt embedding or subordination, but interactive tasks which require reasoning are assumed to make demands on L2 learners to attend to complexity of L2 output. What flows from this argument is that complexity is first and foremost associated with task design and throughout planning time L2 learners are assumed to allocate part of their planning to L2 complexity if there is demand for this feature of L2 performance.

As Robinson (2001) rightly observes, an interaction between planning as resource depleting and resource-directing dimension of task-complexity is likely to induce syntactically complex L2 speech. While the first dimension can be operationalized via strategic or on-line planning, the second dimension has to be part of task design. It has to be noted that learners' L2 proficiency is the other side of the triangle which might induce syntactically complex language. Assuming that learners are potentially able to take care of syntactic complexity in their speech and that the task has the potentiality to make demands on their attention and working memory to attend to complexity, planning is argued to create an optimum condition for complex L2 production. L2 complexity, then, is a common product of multi factors which need to be present simultaneously to contribute to its emergence.

The findings in the present study showed that complexity cannot be guaranteed as a by-product of pre-task planning; and even written mode of L2 production, which provides learners with on-line planning did not contribute to syntactically complex L2 production.

## **8. Conclusion**

Drawing on the results obtained from the present and previous studies it



is concluded that for striking an effective balance between different features of L2 production, particularly between fluency and accuracy, in meaning-focused instruction, pre-planning condition has the potential to contribute to such a balance. Detailed planning can have a considerable role in directing learners' attention to focus on form. Such a focus on form coupled with meaning negotiation might protect interlanguage system against fossilization of some grammatical features which otherwise might be ignored. It might also discourage L2 learners, especially those with limited communicative ability, from resorting to lexicalized language and communicative strategies for getting meaning across without any serious effort for digging a form out of their mind. Modality of L2 production deserves a special attention as far as form and meaning balance is concerned. Given that writing is not assumed to exercise less stress than oral task completion usually does, it is suggested as a pre-task activity for attending to form and other aspects of L2 production.

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