

Freewriting: Feedback, Output, & Homework

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In this quasi-experimental study, the effectiveness of a freewriting program was assessed based on freewriting output growth over one semester. Implemented in three intact Japan-based university process writing classes (N=34) a total of 30 freewriting tasks were assigned with 14 in-class and 16 out-of-class. Freewriting tasks were grouped into four dependent variables: pre-test, early-stage, late-stage, and delayed post-test. These dependent variables were examined using a two-way ANOVA with three feedback types as factors. Results suggested no statistically significant difference of freewriting output means between factors. Data were then analyzed for in-class freewriting mean output increases using a one-way ANOVA. Results suggested statistically significant gains in all stages with the exception of a plateau from late-stage to delayed post-test. However, delayed post-test output results presented no decline and thus imply enduring cognitive development. Additional mean comparison tests were run comparing in-class and out-of-class freewriting task output. Differences in mean ranks were observed in the early-stage only suggesting out-of-class task diligence. Recommendations for freewriting program implementation and freewriting task features are discussed.

I. Introduction

In EFL contexts such as Japan, opportunities for extensive L2 output may be difficult to source though they are vital for L2 mastery (Nation, 2007; Nation & Yamamoto, 2012). What is more, fluency development activities are regularly under-attended even in the classroom (Nation,

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2007). Bleaker still is the specific situation in writing. As students enter university, they are often ill-prepared for what is faced in the writing courses that many of them must take. This reality is even in light of English language education reforms found in Japan's Course of Study guidelines that require all classes including writing to adopt a more communicative approach. Yet, grammar translation and a focus on accuracy remain prevailing practices in many Japanese high schools (Yasuda, 2014) as evidenced in many of the textbooks used (Kobayakawa, 2011). From this, fluency attainment seems futile. However, to this end, the educational intervention of freewriting is easily implemented in high school or university settings. In fact, if freewriting tasks are integrated into the overall learning objectives of writing courses, and not just included as stand-alone activities, then a variety of positive outcomes can be realized. For example, freewriting as a component of the planning process has been shown to enhance sentence complexity, accuracy (Doe & Figueroa, 2015) and fluency development (Cohen, 2013; Dickinson, 2014; Ferreira, 2013; Leblanc & Fujita, 2012; Lubold, et al., 2016; Ottosan & Crane, 2016; Sponseller & Wilkins, 2015). Because of the ongoing investigation of freewriting and its relevance to the improvement of a host of skills, this study will report on the implementation of a freewriting program in a university process writing course. It will outline program features that are perceived to have made the implementation successful and those viewed as not significant to the outcomes. However, the recommendations made in this study cannot be generalized to all contexts and should be assessed critically. This freewriting program was appraised based on the freewriting output gains observed (i.e., fluency development) and with the opinion that output gains are credible benchmarks of cognitive development.

II. Literature Review

This literature review is intended to provide a general base of knowledge related to the extant literature of freewriting, particularly in Japan. As well, it is intended to provide basic theoretical and practical information on the design features of the freewriting program implemented in this study that were believed would have an impact on freewriting output.

(1) Freewriting

Freewriting is the act of writing about a topic without stopping for a period of time. Those engaged in the task should not be troubled by rhetorical pattern, spelling, or grammar. The only rule that guides freewriting is to not stop. Spawned in L1 writing classes, Elbow (1989, 1998) was a main proponent and sang a multitude of virtues such as reducing any writing-rooted affective filters - to 'get the ballpoint rolling' - as well as being an idea generator and modality for personal exploration and discovery (Belanoff, P., et al., 1991). Typically, 10 – 15 minutes is allotted for such a task though this does not appear to be derived from empirical information. Rather, Elbow (1989) imagined 10 minutes as time appropriate based on his experience and goals for the task. Over time, freewriting variations have emerged such as focused (writing on a specific topic), public (sharing what was written with others), and focused-public freewriting (specific topic writing and sharing) (Belanoff, P., et. al, 1991). Other terms for these variations include guided (teacher selected topic) and unguided (student selected topic). In addition to the expansion of the types of freewriting applied in the L2 classroom, so have the purposes including the cross-over into related writing skills such as planning, which leads to complexity, accuracy and fluency gains. (Asraf, et al., 2018; Doe

& Figueroa, 2015). Freewriting has also been shown to have an affective element: raising student confidence (Hwang, 2010), and attitude toward L2 writing (Dickinson, 2014). It has also been investigated for its impact on listening comprehension (Hinkle & Hinkle, 1990), reading fluency and comprehension (Palmer, 2010), as a predictor of reading outcomes (Abbott, et al., 2010; Yildirim, et al., 2020), and even contributing to the development of overall English proficiency (Penn & Lim, 2004). However, the most explicit target of freewriting research is to measure writing fluency development.

(2) Freewriting, fluency development, and working memory

Fluency is one of the four strands of language acquisition made nearly ubiquitous in the field of second-language acquisition by Nation (2001, 2007). Coverage of the four strands is essential for language mastery, and each strand must receive equal attention. The four strands are language-focused learning, meaning-focused input, meaning-focused output and fluency development. According to Nation, fluency development tasks must include extensive use of familiar language under moderate time constraints (2001, 2007). Though the literature cannot yet agree on the definition of fluency, from the cognitive perspective, it implies automaticity of processes. As such, another line of inquiry would be to seek an explanation of why fluency matters. Clearly, there is a communication benefit, but to cognitivists, which is the position taken in this paper, fluency is a manifestation of the degree of efficiency of a number of underlying processes such as working memory (hereafter WM) (Segalowitz, 2010). The more fluent one becomes is a function of efficiency gains in the subprocesses in WM. Hence, in this study, output gain in freewriting is a signal that the subprocesses in WM are developing in the direction

of automaticity. This matters because WM matters. WM functions to temporarily hold and manipulate information to perform basic tasks, make assessments and decisions, so it is essential in many life situations and language learning is no exception. Thus, it is intensely profitable to engage in educational interventions that strengthen and improve cognitive processes like WM because highly efficient WM subprocesses allow language learners to engage in language-related activities with little conscious effort resulting in what often has been referred to as fluency.

(3) Freewriting, fluency development, and choice

Bonzo (2008) is commonly cited in Japan-based freewriting literature. Though his study was not conducted in Japan, it has been replicated by many in the Japanese context. In a short-term study he measured fluency development using a fluency index (hereafter FI) formula: total unique tokens divided by the square root of two times the total tokens (Carroll, 1967). This formula allows for fluency to be measured with a lexical complexity inclusion. However, FI is not particularly useful unless there are comparable dependent variables. In Bonzo (2008), the dependent variables were topic selection method. He found that participant FI scores were higher when freewriting topics were student-selected. This is a consistent outcome in the extant literature in Japan-based studies (Cohen, 2013; Dickinson, 2014; Ferreira, 2013; Leblanc & Fujita, 2012; Lubold, et al., 2016; Ottosan & Crane, 2016; Sponseller & Wilkins, 2015). The only research producing counter-evidence was Head (2016). In fact, in his study, not only was there no difference between teacher-selected and student-selected topic freewriting FI scores, as the study progressed, teacher-selected topic freewriting FI scores were greater. On the whole, for fluency development, the research evidence supports students being given the

freedom to write about topics of their choosing. However, it was noted that the time it took the participants to select their topic was considerable (Sponseller, et al., 2015). Thus, student-generated topic lists or at least topic lists that students could opt to choose from would likely alleviate the some of the burden associated with student-selected freewriting topic decisions (Ottosan et al., 2019) and as a result, facilitate writing fluency development.

(4) Freewriting and feedback

Feedback on freewriting activities must not be corrective as regards the content because it would discourage desired behaviours. However, if the feedback is positive (Nation, 2007), specifically praise of effort, then this type of feedback can encourage growth mindsets (Dweck, 2007; Dweck & Yeager, 2012; Leis, 2021, 2021a, Zarrinabadi, 2021) Growth mindsets are mindsets or beliefs of personal agency: one is an agent in one's own present and future circumstance as is proposed in Social Cognitive Theory (Bandura, 2006, 2008). If effort is praised, as opposed to praise for ability or intelligence, then students are more likely to believe that skill development will be realized through effort and perseverance. They are also more willing to accept challenges and set higher goals. Learners with these mindsets achieve more and have higher instances of success than those with fixed mindsets.

Research in education has shown that when students are praised for their learning process (e.g. 'you did this so well; your ability has improved. '), they believe in the importance of hard work, are more likely to approach challenges, and ultimately experience more success compared to those who are praised for their outcomes or their ability. (Zarrinabadi, et al., 2021, p.1)

Though Ferreira (2013) provided corrective feedback on participant output based on request with no observed decrease in FI scores, freewriting purists would comment that corrective feedback should not be directed at freewriting content in any manner.

Process criticism is very different from praise, person criticism or error correction. However, Kamins & Dwerck (1999) showed that process criticism, like praise, fostered goal-mastery behaviour (i.e., a growth mindset) while person criticism was more likely to result in learned helplessness, which is a mindset where success cannot be achieved through one's own actions. Process criticism, as the name suggests, involves assessment and comment of how a task could have been performed to a higher level purely based on the level of adherence to suggested process instructions. For example, in freewriting, if an individual stops writing, erases or corrects a spelling error, then this would receive comment for instruction non-compliance. Thus, process-criticism feedback is directed at improving process performance, which should translate into end-product improvement. This study applied these two feedback forms for freewriting tasks as the literature reviewed suggested positive outcomes could result.

Finally, feedback (or comments) can serve a completely different purpose: as a monitor. If individuals understand that their work is being reviewed, then they are more likely to attend to the task with diligence though perhaps only in the short-term (Brown, 2001, p.75). Bonzo (2008) and Rettig-Miki & Sholdt (2014) did this in their studies and for the purpose of monitor.

(5) Freewriting as homework (out-of-class task)

Practicing freewriting beyond the classroom allows for the additional development of motor skills related to the complex act of handwriting

(Peverly, 2006) and offers opportunities for WM subprocesses development. In addition, homework or out-of-class tasks can yield a range of benefits including academic achievement as well as foster self-regulatory behaviour (Bembenutty & White, 2013). This creates a positive feedback loop in that worthwhile homework fosters self-regulatory behaviour and self-regulatory behaviour has been identified as a major contributor in homework completion (Zimmerman & Kitsantas, 2005). Pupils with high degrees of self-regulation and self-efficacy possess internal, individual factors that are associated with attention being given to non-supervised tasks. However, intrinsic motivation is not in the direct control of instructors or researchers. Fortunately, there are externally sourced motivators as well. Specifically, task design can also have an impact on completion. In relation to this study, and thus not an exclusive list, MacBeath and Turner (1990) posited that homework should: be clearly related to class work, manageable (not too time consuming), be balanced in terms of challenge and difficulty, allow for individualism, promote self confidence and understanding, have recognition or reward for completion, and there should be guidance and support if needed. Other relevant research regarding homework completion indicates the importance of feedback and praise (Hallam, 2006; Letterman, 2010; Watkins, 2012; Xu, 2011). Another factor that stimulates the motivation to complete is homework is offering some form of student choice. Ryan & Deci (2000) found that choice positively impacts intrinsic motivation because it offers ownership of the task as there is the opportunity for individual expression. Choice and the dynamic relationship that exists between it and intrinsic motivation has been identified as highly valuable in the pursuit of homework engagement and ultimate completion (Keane & Heinz, 2019; Patal, et al., 2010; Scott & Glaze, 2017). Thus, offering students choice in their freewriting (out-of-class) task homework,

along with adherence to the best practices parameters outlined above, could create conditions where in-class and out-of-class freewriting output would be comparable in addition to producing the numerous other benefits associated with the non-supervised effort.

(6) Conclusion

Freewriting has been applied in classrooms for decades. As time passes, variations and benefits grow as does the literature that investigates it. However, the impact of feedback type, or comparing homework (out-of-class task) to in-class freewriting output has yet to be articulated.

III. Methodology

(1) Participants and setting

In three content-identical classes, 43 - 1st, 2nd, 3rd and 4th-year participants (19, 12, 11, 1, respectively) in the Faculty of Education were enrolled. The overwhelming majority of participants were from the Department of English Education though Childhood and dual English and Childhood Education majors also comprised the class populations. Because the primary determinant for class selection is based on schedule allowances, class sizes differed: 20, 14, and 9. After nine participants were removed from the study, group populations were 12, 13 and 9 leaving a total of $N=34$. Thirty-three of the thirty-four remaining participants had the goal of becoming a teacher in elementary or junior high school indicating high degrees of instrumental motivation (Gardner & MacIntyre, 1991) in addition to other latent drivers for L2 competence or mastery goals. Of the 34 participants, there were 12 male and 22 female. Benchmark test score information providing insight on participant English ability are provided in Table 1.

Table 1

Participant TOEFL PBT Scores

<i>M</i>	<i>Range</i>		<i>SD</i>
	<i>Min</i>	<i>Max</i>	
446.5	387	513	49.50

Note. *M* and *SD* represent mean and standard deviation, respectively. 30 of 34 participant scores were available. Tests dates were 05/29/21 and 11/13/21.

(2) Procedure

The freewriting in this study was integrated into two steps of the course’s writing process: pre-writing and organizing. As such, prior to any freewriting task, participants were provided a topic or question for discussion in pair or small groups for mental lexicon priming purposes. Discussion was repeated a maximum of three times. The first and often second discussion sessions were engaged in the L1 for five or six minutes. There were two reasons for this: classes began with pre-writing activities, so L1 offered a “wake-up”, and additionally, it allowed for extensive idea generation, which facilitated the organizing stage activities that followed. After each discussion, one participant facilitated a brainstorming session and elicited talking points, which he or she would list on the blackboard (in the L2). For the final discussion session, participants were required to use L2. They were advised that the final discussion was direct preparation for their freewriting task. Participants returned to their original seating positions. Prior to the first freewriting task, the benefits of freewriting were extolled and included: improvements in writing fluency, idea generation, speaking fluency and handwriting speed. Thereafter, the following process was engaged for all in-class freewriting sessions: freewriting tasks from the previous week (in-class and out-of-class) were returned and comments viewed by the participants. Then, an oral review of the instructions (Table

2) was completed. This review would often include eliciting the freewriting instructions from the participants in order for them to internalize and follow without deviation. Next, the participants, as per instructions, would think about the freewriting topic that was just discussed for one minute to organize their thoughts. After this, participants were advised to stretch and get ready to begin. Finally, they would perform the freewriting task for a five-minute duration. A timer was displayed on the class TV and participants were instructed to write until the timer sounded. A verbal instruction of “Stop” was also provided to signal the end. Upon completion, participants were encouraged to stretch, shake-out their hands and fingers, count the number of words they wrote at the bottom of their freewriting and circle it. In this study, a word was considered to be a token of any length. Scratched out words were not counted. After this, participants added the word count to their Freewriting Record Sheet. Then, they were put into groups to begin organizing the information they had produced in the discussion, brainstorming session (points listed on the blackboard), and in freewriting tasks, into categories. On three occasions during the course, this process was extended to include outline creation, and on one occasion extended into being the foundation of “Draft 1” of a writing assignment. This process is consistent with the writing theory employed in the course design, thus reinforcing the purposefulness of the freewriting tasks.

Table 2

In-class Freewriting Instructions

Before	Discuss a topic 2 or 3 times (L1, L2) Think about the topic for 1 minute.
During	When the time starts, begin writing. Keep writing for 5 minutes. Don't stop! If you need to think, write "I am thinking. I am thinking..." Do not erase. Do not scratch out words. Do not worry about grammar. Do not worry about spelling.
After	Stop when the time is up. Stretch. Count number of words written. Record the date and the number of words on your Freewriting Record Sheet.

Out-of-class freewriting tasks were regarded as part of course homework and each week participants were required to complete freewriting tasks. Homework completion accounted for 10% of the course grade, but participants were advised and reminded that points were to be awarded for completion and not for content or quantity of output. For Class 2 (freewriting program initiated), there were three out-of-class freewriting tasks assigned, Class 3 and 4 were assigned two; thereafter, one freewriting task was assigned each week as out-of-class activity. Instructions for out-of-class freewriting tasks were identical though with the following changes: there was no discussion element, and participants were advised to select a topic from one of the 66 topics provided (distributed list) or write about a topic of their desire. Topic selection was not included as part of the 5-minute out-of-class freewriting task. Out-of-class freewriting tasks were collected each lesson along with the freewriting tasks completed in class, which were returned the following week with accompanying written feedback (Table 3).

Table 3

Freewriting Feedback

<i>Written Feedback</i>	<i>Description</i>
None	No written feedback provided. Check mark directly on participant freewriting paper indicating receipt.
Praise	Written positive comments made on freewriting effort. (“ <i>Good effort!</i> ” Comments made on the content (e.g., “ <i>I like watching YouTube videos, too.</i> ” “ <i>Wow! Sounds like you had a great weekend.</i> ”) Praise and encouragement offered that improvement is possible/ occurring. (e.g., “ <i>Keep working hard. You are getting better.</i> ”) Goal offered as encouragement. (e.g., “ <i>Try for 150. You can do it!</i> ”)
Process criticism	Direct feedback on instruction non-compliance (e.g., “ <i>Do not scratch out words.</i> ”) Suggestions to improve freewriting output (e.g., “ <i>Write faster. Too neat.</i> ”)

At the end of the study (Class 15), participants submitted their course binder as well as all of their freewriting tasks including the Freewriting Record Sheet. Data, entered each week into an MS Excel worksheet, were checked for consistency between the week-by-week dataset and the Freewriting Record Sheet. Any missing data were entered and contradictions resulted in review of the hard copy and reconciliations made if required. Then, data were organized into four groups: pre-test, early-, late-, and delayed post-test stages. This method of organization ensured sample size balance with the pre- and post-test having equal numbers of in-class freewriting tasks as was the case for early- and late-stage freewriting tasks. The following research questions were asked:

RQ1: Would written feedback type have a statistically significant effect on freewriting output?

RQ2: What freewriting study stages would present statistically significant in-class freewriting output gains?

RQ3: Were there any differences between in-class and out-of-class freewriting output means?

IV. Results

The dataset was reviewed for missing data. Due to the nature of the study, all the missing data are missing completely at random (hereafter MCAR). Partly based on this review, a listwise deletion of 9 of 43 participants was performed. However, to retain a sample size of 30+ participants and sufficient power in the study, the listwise deletion was only invoked for extreme cases where three or more in-class freewriting output data points were missing. Descriptive statistics to determine missing data frequency were run and missing data were found to be between 0% - 6% of each variable (i.e., for each freewriting task). For these missing values, data were imputed via SPSS27 mean substitution/replacement. Use of a mean series imputation for each variable was appropriate because the missing data are MCAR (i.e., not correlated with other variables in the dataset).

(1) RQ1: Would feedback type have a statistically significant effect on freewriting output? A two-way ANOVA was performed to analyze the effect of written feedback type on freewriting output (Table 4). The results revealed a not statistically significant interaction between the effects of feedback type and freewriting output ($F(2, 3) = 0.4541, p = 0.6352$). Furthermore, the effect size ($\eta^2 = 0.0001$) is extremely small indicating the magnitude of the difference between the means is negligible. Thus, the null hypothesis could not be rejected. In other words, feedback type had no measurable influence on freewriting output.

Table 4

Means and Standard Deviations of Freewriting Output and Written Feedback

	Freewriting Output (Words per Minute)							
	Pre-test		Early-stage		Late-stage		Delayed Post-test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Written Feedback								
None (check mark only)	20.93	6.01	24.78	6.95	28.10	6.95	28.56	6.70
Praise	20.36	5.51	22.99	5.43	24.91	6.68	26.99	6.76
Process criticism	19.44	4.86	24.71	5.21	25.94	4.07	28.81	5.15

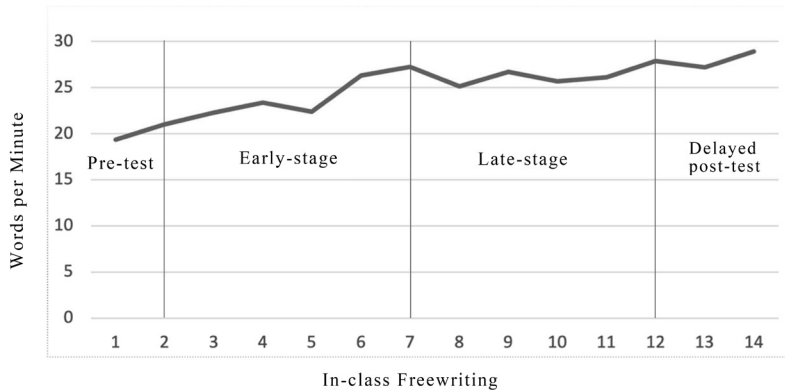
Note. *M* and *SD* represent mean and standard deviation, respectively.

(2) RQ2: What freewriting study stages would present statistically significant in-class freewriting output gains? Figure 1 shows freewriting output change from pre-test to delayed post-test. Levene's test indicated equal variances ($F = 0.0875, p = 0.967$). A one-way analysis was conducted to compare freewriting output levels over each stage condition. The analysis confirmed that statistically significant difference exists between freewriting output means [$F(3, 425) = 25.1972, p = 0.000$]. Tukey's HSD post hoc tests with Bonferroni adjustment determined that statistically significant differences occurred from pretest to early-, early-to late-, and early-to delayed post-test stages ($M = 20.19, SD = 5.52$), ($M = 24.31, SD = 5.81$), ($M = 26.30, SD = 6.16$), ($M = 28.05, SD = 6.19$), respectively. Moreover, the effect ($\eta^2 = 0.39$) is large and time (stage) accounts for 13.1% of the variance. However, there was no significant difference between late-stage to delayed-post-test. In summary, the results suggest that freewriting output increases over time, particularly at early stages. Though statistically significant change occurs mid-study (early- to

late stage) this increase becomes incrementally less resulting in a plateau in the late-stage of the study. Further, the delayed post-test indicates that participants retained freewriting output capabilities even after an extended period of interruption. It is speculated from the data that marginal output growth would again occur if freewriting were continued.

Figure 1

In-class Freewriting Output Over Time



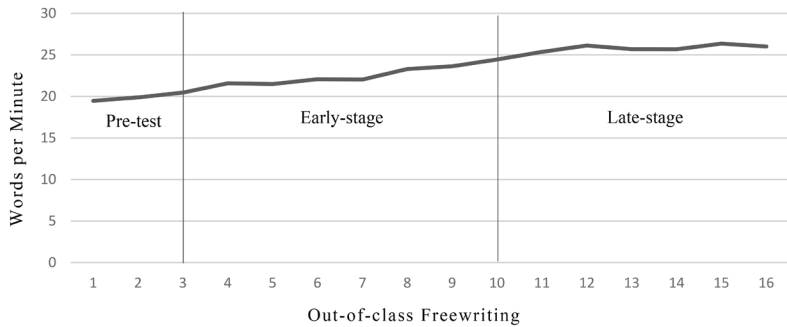
Note. $N=34$

(3) RQ3: Were there any differences between in-class and out-of-class freewriting output means? The out-of-class freewriting output growth path shows stable incremental gains from pre-test to early-stage followed by a plateau in the late-stage (Figure 2). This output growth path is similar to the data presented for in-class freewriting tasks (Figure 1) though with less volatility. Due to different sample sizes (i.e., number of freewriting tasks between in-class and out-of-class freewriting tasks at each study stage), a non-parametric group mean rank comparison was employed. Results of the Kruskal-Wallis H test for the pre-test stage showed not significant mean rank differences $H(1) = .0044, p = .9466$; and for the late-stage

$H(1) = .1555, p = .6933$ Therefore, the null hypothesis: group mean ranks are equal cannot be rejected. Results of the Kruskal-Wallis H test for the early-stage of the study, however, showed mean rank differences $H(1) = 22.1271, p = .0000$. Therefore, the null hypothesis is rejected: there is a high probability of statistically different freewriting mean ranks in the early-stage of this study between in-class and out-of-class output.

Figure 2

Out-of-class Freewriting Output



Note. $N=34$. There were no out-of-class freewriting tasks assigned in the delayed post-test stage.

V. Discussion

RQ1: The results of the two-way ANOVA indicated that written feedback had no impact on freewriting output. This is also supported by the fact that each group followed a similar growth path week by week.

(1) Praise

Praise may have had an initial impact but did not have had an ongoing influence. Most positive feedback/praise research surrounds child development with the exception of Leis (2021, 2021a) and Zarrinabadi

(2021). Hence, growth mindsets may already be instilled in many of the participants, thus making the praise redundant. Further, there was limited breadth in the comments themselves. In other words, the comments may have 'gotten old' quickly. Lastly, in one study located, the results were in concordance with work done by Skipper & Douglas (2012), in that there was no difference in a praise condition and a control group of no feedback at all.

(2) Process-criticism

Process-criticism resulted in rapid reductions in certain undesired freewriting behaviours: scratching out words and stopping writing to think. In fact, by the fourth freewriting session, those behaviours were extinguished. Though the details are available, they are not particularly noteworthy due to the fact the regular verbal review of freewriting instructions, prior to every freewriting task, included the points of process error that were individually identified for each participant. This would possibly make the feedback redundant save for the personalization (i.e., a note with participant's name with specific identification of process errors made was stapled to previous freewriting task submission). Further, all groups improved in process possibly because of the regular verbal review of pre-task instructions though at different rates as seen in (Table 4). However, the impact of this variable rate of growth due to process adherence was not large enough to translate into meaningful, measurable differences at the early-stage of the study.

(3) Control (No written feedback)

The control did not receive written feedback and performed as well as or better than both written feedback groups. It is true that there were no

statistical differences between group output means though the control group (Table 4) consistently produced higher raw score totals. Explanations for this may be related to groups size (i.e., smallest), demographic (5 – 3rd-year students as participants), researcher writing class familiarity (6 of 9 had taken the entry-level writing class with the researcher) or having a higher general English ability (highest TOEFL score average). Another explanation could also account: the verbal review of freewriting task instructions prior to every in-class freewriting task supplied sufficient feedback.

(4) Recommendation

Praise and process-criticism feedback are not recommended as elements of freewriting programs as regards output facilitation. In fact, for praise, it was extremely time consuming for the researcher. For example, reading and providing feedback on 25 to 60 freewriting tasks per week with output of 130 – 150 words from many participants, required up to two hours each session. Written feedback may have had a positive impact on attitudes to L2 writing, but it was not investigated in this study. Without explicit evidence of support, it is cautiously recommended that process-criticism feedback be provided at the implementation stage of a freewriting program due to the minimal time required to complete it. Then, over the next three or four freewriting sessions process-criticism feedback can be transitioned to simple check marks. Finally, a verbal review of the instructions and benefits of freewriting are recommended and are speculated to be sufficient feedback to effect process adherence.

RQ2: In-class freewriting output gain occurred from pre-test to early-stage, and from early- to late-stage. However, also present in the data is a late-stage growth plateau (Figure 1). This growth pattern is not surprising

and is found in numerous domains.

(1) Growth Plateau

A non-linear regression curve is a growth pattern frequently observed in physical, cognitive and language development. (Daller, et al., 2013; Roberts, 1986). In fact, it is found in many domain skills in second language education. For example, in the author's research experience, reading speed gains in speed-reading studies often followed a similar track (Leroux, 2016; Leroux & Reinbold, 2020). Accordingly, steep growth slopes initially occur and are followed by progressively shallower slopes. This results in a plateau. With the interaction of time and incremental gain, statistically significant growth will once again occur as it did in this study. However, it is expected that subsequent plateaus would be extended (i.e., increase in duration) until eventual stasis and ultimate declines due to motivation ebbs or other factors affecting physical and/or cognitive function. Awareness of the growth path in this study is important as various educational interventions or program modifications can be implemented to hasten exit from a plateau. For instance, allowing shorthand and abbreviations in freewriting tasks could facilitate output. This is because the frequency of encoded information being retrieved, placed in the phonological loop and transferred to an external source (i.e., from brain to paper) is increased. In fact, this would redefine freewriting as notetaking. Specifically, the notetaking of a lecture being given by one's inner voice. This conceptual metaphor is highly appropriate in understanding the processes that are taking place. In WM vernacular, inner voice is termed as subvocal articulatory rehearsal (Gathercole & Baddeley as cited in Chenoweth & Hayes, 2003). A common example of subvocal articulatory rehearsal is the repetition of a phone number in one's mind

prior to transfer to an external source. Once transferred, another phone number or alternative information can be retrieved, temporarily stored, rehearsed, and transferred. Thus, the quicker the process of retrieval to transfer, the more efficient the subprocesses in WM, which results in more output. In the simplest sense, using shorthand or abbreviations in freewriting would be tantamount to pushing oneself to write as fast as the mind is 'speaking'. Based on the results of the freewriting growth pattern observed in this study, this type of intervention could be instituted in or about Week 8 (Figure 1) and potentially reduce the duration of the plateau. In summary, exit from a growth plateau could be hastened by efficiency improvements in WM, which may be facilitated by the educational intervention of encouraging shorthand and/or use of abbreviations.

(2) Working Memory Development

Reasons for early rapid freewriting output increases provide evidence that WM processes are becoming more efficient through practice. Recall that in the pre-test and early-stage of the freewriting investigation, the relative volume of freewriting tasks was the greatest. Peverly (2006) stated that the best way to improve the operation of working memory is through instruction and practice, especially with basic skills. Hence, because of this early intensive practice, skills improved rapidly. From the cognitivist viewpoint, because of practice and cognitive development, fewer attentional resources would have been allocated to the performing the complex act of writing, while at the same time, enhanced access to semantic, syntactical, lexical, morphologic and orthographic information was facilitated. (Badddeley, 2000; Olive, 2012). After this initial rapid growth, by applying a non-linear model of development to WM efficiency enhancement, there would be marginally decreasing units of gain in the

efficiency of the subprocesses operating in WM though incremental gain would still be present as seen with freewriting output investigated here. Interventions directed at improving the performance of WM would likely be profitable during the plateau though it must be known that individual differences would insert latent variables into any growth model and make accurate growth prediction difficult.

(3) Enduring effects

The delayed post-test output results showed no decline over a period of interruption between 21 – 28 days over the Japanese New Year holiday. In fact, output means were statistically significantly greater when compared to early-stage levels. This suggests that the improvements in WM efficiency endure even when practice is interrupted. At a local level, this enduring effect is noteworthy given that the freewriting process implemented in this study could be applied to three academic writing classes in the department's writing program with limited expected loss of WM subprocess efficiency due to extended breaks during holidays.

(4) Recommendation

The results of the in-class freewriting tasks output offer insight. First, the in-class implementation plan appears to have been a success in spite of concerns of fatigue or loss of interest prior to the commencement of this study. Participants appear to have maintained their motivation even when experiencing a plateau possibly due to the integration of freewriting into other stages in the class writing process. Therefore, integrating in-class freewriting tasks as one constituent of a highly interactive set of exercises and activities bears fruit. Finally, it is valuable to monitor and assess freewriting growth paths to determine locations for educational

interventions during periods of plateau.

RQ3: Results of mean comparison tests suggest that the null hypothesis cannot be rejected. In other words, the possibility of equal means between pre-test, and late-stage in-class and out-of-class freewriting tasks are likely to be not different. This suggests that out-of-class freewriting tasks were perceived as valuable and doable and were thus attended to diligently, which was also evidenced by high completion rates. Possible explanations for this follow.

(1) Out-of-class task design

According to MacBeath & Turner (1990) and Hallam (2006), homework should be clearly related to class work; manageable (not too time consuming), balanced in terms of challenge and difficulty, and allow for individualism. Out-of-class freewriting activities met these requirements in detail. Clearly, out-of-class freewriting tasks were related to regular class work. In fact, in terms of the focused act, it was identical. The tasks were also manageable in terms of time required to complete. After participant-decided topic selection, which allows for individualism and develops or reinforces intrinsic motivation (Keane & Heinz, 2019; Pattal, et al., 2010; Ryan & Deci, 2000; Scott & Glaze, 2017), the required process consumed a sum of the following steps: one minute (thinking about the topic), five minutes of writing, and approximately two or three minutes of word counting and recording. Thus, the entire out-of-class task required under ten minutes of time. Additionally, clear instructions resulting in an absence of ambiguity also promoted homework completion (Wilson & Rhodes as cited in Watkins, 2012). In closing, freewriting as out-of-class tasks appears to conform to empirically-based best practices guidelines. Because of this,

out-of-class freewriting tasks were believed to have been diligently attended and completed to a high standard. However, there must be reasons or a reason for the differences in mean ranks in the early-stage of this study. It is speculated that the reason for this difference is the total time on task (hereafter TTOT), which is considerably higher for in-class freewriting tasks. The impact of this is discussed more thoroughly in the next section: Choice.

(2) Choice

The perceived power of student-selection as a method of freewriting topic selection was strengthened beyond what it was when reviewed in the literature. Given that the difference of TTOT between out-of-class freewriting and in-class freewriting was extreme: in-class freewriting TTOT was 300% greater, or more, but only in the early-stage of the study did the data yield any statistically significant difference. Thus, the power of choice either from a list or from one's individual experience is formidable. Having said this, for out-of-class freewriting tasks, one area of concern is the degree to which participants understood the power of priming (Hoey, 2012; Schacter & Buckner, 1998) before writing, which may have been the reason for differences between in-class and out-of-class freewriting output means in the early-stage of the study. However, choice still strongly implies that participants are more likely to take ownership of their tasks. For example, there is a tremendous amount of empirical information provided from studies applying Self-Determination Theory (hereafter SDT) to explain and even predict learner actions and achievement. In SDT, autonomy is one pillar of this motivational model. And choice, is one constituent of this pillar. If choice exists, then tasks are engaged based on the individual's volition. If choice does not exist, then a lack of effort, or task avoidance

behaviours would prevail (Ryan & Deci, 2000). In fact, in a meta-analysis regarding the subject, “Results indicated that providing choice enhanced intrinsic motivation, effort, task performance and perceived competence, among other outcomes.” (Patall, et al., 2012, p.270). Clearly, topic selection method (i.e., choice) is central to the diligence level applied to the out-of-class tasks in this study and has significant pedagogical implications for the implementation of freewriting as regular course activity.

(3) Feedback as monitor

It is assumed that when the participants knew that their work was being reviewed but not error corrected, especially in the early stage of the study, and particularly for those with lower levels of intrinsic motivation, they may have been spurred to attend to out-of-class freewriting tasks more conscientiously even if only for a short period of time (Brown, 2001). However, caution is paramount to this discussion. External sources of motivation inhibit the development of intrinsic motivation and can create a learned helplessness mindset, which in turn is manifest into a lack of engagement or interest (Patall, et al., 2012), which would impact out-of-class freewriting tasks as the study progressed. Thus, early in the study, class time was allotted for student review of the praise or process-criticism note added to their returned homework. However, the time allotted for this review was reduced to zero by the end of the study.

(4) Recommendation

Freewriting task design for out-of-class freewriting tasks should follow the extant literature of best practices as listed above. As well, evidence from this study has shown it to be effective. In addition, it is recommended that a five-minute freewriting time constraint be applied

to maintain a moderate amount of time needed to complete the out-of-task work. This is particularly important for low ability and mixed ability classes. Further, a total of 16 out-of-class freewriting tasks were completed in this 15-week course and attended conscientiously. Hence, requiring one regular out-of-class freewriting task each week is appropriate. This is because growth patterns suggest underlying skill development endures and that gains accrue with regular practice. Further, there was no evidence of participant fatigue. Regarding feedback, however, the value of written feedback being provided to participants' homework is mirky, at best. It can be stated with more certainty that if written feedback is provided, it should be scaled back as quickly as possible in order for intrinsic motivation to be nurtured. It is beyond clear that a key factor for homework to be attended to earnestly would be that student-selected choice of topic is available. This can be facilitated by lists and/or by encouraging participants or students to summon topics based on past or current experiences (activating episodic memories), or topics of personal interest. However, learners must understand the value of thinking for one minute for priming purposes before they begin their out-of-class freewriting. In summary, topics that are familiar are desired and far outweigh the effects of feedback, no matter how positive or constructive. Thus, researchers and/or instructors should assign out-of-class freewriting activities with as much topic choice as possible, which is concordant with best practice guidelines for homework task design. This creates positive feedback interactions between autonomy and intrinsic motivation, which will result in out-of-class tasks being perceived as valuable, and thus deserving of attention and effort (Ryan & Deci, 2000).

VI. Conclusion

The implementation of freewriting in a process writing program is deemed to be successful though modifications are appropriate. First, the impact of feedback on output was negligible, yet time consuming, and thus is not recommended. Next, freewriting should not be a stand-alone task. It must be integrated with class operation so as to support the achievement of course goals and objectives and maintain student investment. Third, the utility of assigning freewriting as out-class-tasks with topic freedom (i.e., choice) given to students was clear and is recommended. Finally, it is recommended that freewriting tasks be five minutes in length for in-class and out-of-class task considerations. Further, a schedule of 20-30 total freewriting tasks (i.e., in-class and out-of-class) is reasonable over one semester and yields a promising growth path though the non-linear relationship of time/practice and gain must be monitored to best implement interventions directed at improving the subprocesses at play in WM.

VII. Limitations

The major limitation of this study was the absence of pre- and post-test participant surveys measuring affective dimensions, and/or attitude toward L2 writing. These surveys would have added a much-needed component in the explanation of the freewriting output growth pattern produced as well offer insights into the internal transformations that must surely be occurring in the participants. Furthermore, as in most if not all investigations of language education, incorporating a longitudinal element is also of value, as is increasing sample size. Collaboration with colleagues would alleviate these obstacles to some degree though collaboration brings challenges of its own.

VIII. Future Research

As a result of this study, educational interventions of the application of shorthand or abbreviations is worthy of investigation though it is recognized that many second language learners in Japan have limited knowledge and/or experience in this skill. There is also interest in the impact of increasing the amount of time for the freewriting task. In other words, would the rate (WPM) of freewriting decline if the freewriting task was extended to seven minutes or ten? How would the growth path change? These are interesting research questions as freewriting tasks may contribute to the efficiency of the subprocesses that operate in WM. Another cognitive investigation would be to measure output based on various priming conditions. For example, in order to maximize freewriting task efficiency, determinations of temporal thresholds of discussion could be studied. As such, discussion conditions of 5, 10 and 15 minutes could be compared to output produced. Thus, a “goldilocks” zone, may be determinable for the time needed for priming and would enhance the overall time management of classroom operation. Finally, as a supplement to any future study, valid surveys of anxiety/confidence, and/or attitude to writing in a second language would fill gaps in the literature as they relate to freewriting.

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