IIAI Open Conference Publication Series
IIAI Letters on Informatics and Interdisciplinary Research
Vol.005, LIIR205
DOI: https://doi.org/10.52731/liir.v005.205

Effects of Habit-Enhanced Assignment Design on Learning Behaviors and Psychological Factors of Japanese EFL Learners Under a Distant Online Learning Environment

Asuka Takahashi [*], Yuichi Ono [†]

Abstract

The COVID-19 pandemic has accelerated the integration of Information and Communication Technology (ICT) into education, with blended learning - a combination of in-person and online teaching - gaining significant attention. This study investigates two primary aspects: (1) how classroom interventions enhance habitual learning, focusing on the promotion and control of students' habitual learning behavior, and (2) the role of psychological factors, including cognitive aspects of Self-Regulated Learning and International Posture as a motivational factor, in facilitating habitual learning. This investigation takes place within a blended learning environment where asynchronous online learning complements traditional instruction. During a thirteen-week period, students were tasked with engaging in courseware in a habitual manner, completing one lesson every two or three days. At the beginning of each class every week, "Reflectio" and "Foresight" interventions were conducted. Subsequently, students' learning behaviors were meticulously analyzed and classified into distinct types. The findings revealed that some students displayed habitual learning behavior, some showed semi-habitual learning behavior, while others struggled to complete the tasks. Through a quantitative and qualitative analysis of psychological factors, including questionnaire responses and open-ended interview data, it was evident that students from various behavior types exhibited a diverse range of psychological influences. Despite these differences, almost all students concurred that classroom interventions effectively served as reminders to maintain habitual learning awareness. In conclusion, while these interventions proved effective as reminders and sources of encouragement, further attention to task design is imperative for enhancing habitual learning behavior across a spectrum of psychological factors.

Keywords: Classroom intervention, Habitual behavior, Reflection and foreseeing, Blended learning.

1 Introduction

The outbreak of COVID-19 has led to a noticeable increase in the integration of Information and Communication Technology (ICT) in the field of education. This trend has sparked greater interest in the effectiveness of blended learning, which combines traditional face-to-face instruction with online teaching [1]. It is evident that more empirical research on blended learning models and students' learning behavior is necessary. Insights from online teaching experiences can be used to provide higher-quality blended instruction in the post-pandemic era. Additionally, learning outside the classroom contributes to higher learning quality because many students tend to

[*] Undergraduate Student, University of Tsukuba, Ibaraki, Japan
[†] Faculty of Humanities and Social Sciences, University of Tsukuba, Ibaraki, Japan

procrastinate and postpone learning at home, which leads to learning failures [2][3][4]. Other previous studies claim that individual differences, such as cognitive factors (e.g., Self-Regulated Learning) and intrinsic motivational factors (e.g., International Posture), are important predictors of habitual learning [5][6][7]. However, it is not clear from previous studies whether these factors regulate and control students' behaviors. The study aims to (1) investigate whether classroom interventions designed to raise awareness of habitual learning enhance and control habitual learning behavior in the blended learning environment and (2) explore the relationship between cognitive and motivational factors and the learning behaviors of distant learners.

2 Previous Studies

2.1 Psychological Factors Activating Habitual Learning

2.1.1 Self-Regulated Learning

Self-Regulated Learning (SRL) refers to the intentional and volitional control of one's actions and the utilization of techniques for this purpose. SRL encompasses two primary factors: self-control and self-regulation. Self-control concerns the cognitive style governing whether one's actions are self-guided or externally influenced [8]. In contrast, self-regulation involves the capacity to spontaneously manage one's behavior in situations devoid of direct external coercion [9].

SRL comprises three distinct phases [5]:

Forethought Phase: This stage involves learners planning future learning strategies through self-reflection and the restructuring of their learning approach. Learners must establish forthcoming learning objectives and formulate strategies for their attainment.

Performance Phase: The Performance Phase requires learners to organize, plan, and execute their learning efforts tailored to specific tasks and goals. Learners are responsible for overseeing their learning progress and assessing the outcomes.

Self-Reflection Phase: In the Self-Reflection Phase, learners evaluate their learning processes and outcomes, engaging in self-assessment. Learners must reflect on their learning strategies and accomplishments, identifying both strengths and areas requiring improvement.

SRL represents a pivotal concept in the design of learning environments that cultivate autonomous learners, and a heightened awareness of SRL contributes to positive learning outcomes [5].

2.1.2 International Posture

The concept of international orientation within the realm of English language education encompasses various international behavioral traits, including intercultural friendliness, interest in global affairs, a penchant for international careers, and open attitudes towards diverse cultures [6]. International orientation is believed to contribute to enhanced English proficiency as it serves as a source of motivation for learners and significantly influences their

learning behaviors. The level of engagement with international orientation is presumed to rise as the educational objectives in English language education increasingly emphasize communication and intercultural comprehension. A pivotal concept in the context of English language education concerning effective communication is the "Willingness to Communicate (WTC)." WTC is defined as "the intent to initiate communication in situations where communication is freely available" [10]. The frequency of communication in a second language is not only linked to second language proficiency but is also influenced by social and higher-order factors, leading to individual variations in actual communication behaviors.

2.2 Learning Behavior in an Online Learning Environment

2.2.1 Learning Behavior Types

In recent years, extracurricular activities in online learning have become widespread. However, when compared to face-to-face learning during classes, the approach to assignments tends to be more tailored to individual needs. Consequently, in courses that are exclusively online, there is a notable issue with a high dropout rate, as students often do not persist in their learning until the end [11] [12] [13]. Additionally, online learning styles vary among individuals, and studies have demonstrated a correlation between learning styles in online settings and learning outcomes [2]. This study classified learners engaged in online English learning at a Japanese university into distinct learning styles and subsequently compared their outcomes. The results delineated learning behavior types into the following seven categories:

Deadline-Oriented Type: Procrastinates until the last minute.
Study Habit (Steady) Type: Adheres to a consistent study routine.
Early Finisher Type: Completes tasks ahead of schedule.
Random Type: Mood and motivation fluctuate, easily influenced by external factors.
Motivation Decline Type: Initially motivated but struggle to maintain it.
Peak-and-Drop Type: Exerts effort in the middle but fails to sustain it.
Midterm Catch-up Type: Increases learning efforts from the middle of the semester.

The most prevalent type was the Deadline-Oriented type. Furthermore, it was discovered that learners with a Study Habit (Steady) type achieved the highest learning outcomes. This suggests that promoting self-regulation in online learning and cultivating appropriate learning habits can lead to more favorable learning outcomes.

2.2.2 Previous Studies

In [3], the focus is on learning behavior in online learning environments, with a particular emphasis on procrastination research. The study explores the connection between learners' psychological factors and their learning behavior, categorizing them into various behavior types. These categories encompass procrastinators, learners with established study habits, those who exhibit random behavior, individuals with diminished motivation, early starters, those following a chevron pattern, and catch-up learners. The study also employs decision tree analysis, unveiling the significance of procrastination awareness (PAv) as a predictor of

whether learners tend to engage in procrastination. The key findings of the research indicate that while many learners display procrastination tendencies, they often manifest traits of active procrastinators, displaying proactive learning behavior as deadlines draw near. The study highlights the importance of recognizing the diversity among learners in online environments and the necessity for customized educational strategies and instructional approaches. It is important to note that this study primarily focuses on procrastinators and does not delve into the design of tasks that promote habituation.

2.3 Assignment Design

When incorporating online learning into courses, there is a noticeable absence of practical efforts to improve the effectiveness of instruction. Therefore, in [14], learners in an online English vocabulary learning course were divided into three groups: the Recommended Group, the Quiz Group, and the Assigned-Range Group, to assess their learning effectiveness. The Recommended Group received materials recommended in the first class, the Quiz Group was given assignments specifying the scope and took quizzes before each class, and the Assigned-Range Group was tasked with completing a designated scope by a specified deadline. The results revealed that the Quiz Group, which emphasized habituation, achieved the highest learning outcomes. The current situation, where e-learning is largely dependent on students' autonomy, underscores the need for support in developing and implementing learning plans to attain effective learning outcomes beyond the mere provision of external learning resources [1].

2.4 Purpose of this research

The primary aim of this study is to investigate the relationship between the design of tasks that encourage habituation and various psychological factors such as self-regulated learning, Willingness to Communicate, and international orientation. To achieve this goal, the research will explore the impact of habituation-focused activities, task presentation, and reflective exercises that promote autonomy in face-to-face classroom settings on both learning behavior and psychological factors.

3 Study

3.1 Research questions

(RQ1): Does the presentation of assignment schedules and the implementation of reflective activities that promote habituation contribute to the development of habitual learning?

(RQ2): What psychological factors are the basis of learning behavior?

(RQ3): How do psychological factors underlie changes in learning behavior?

3.2 Procedures

3.2.1 Learning Contents and Assignment Design

In this study, twenty-eight university students with TOEIC scores ranging from 660 to 965 participated as the control group, while the experimental group consisted of nineteen university students with TOEIC scores ranging from 670 to 960. All participants were from the

fields of Psychology, Education, and Disability Sciences. From April to July 2023, a period of 13 weeks, we provided an out-of-class learning program known as “Really English.” This program featured learning materials tailored to the individual student's level, determined through a diagnostic test administered during the first class of the Basic English course. Students were instructed to complete at least one lesson every two to three days, with each lesson encompassing all three areas: Grammar, Reading, and Listening. A total of 39 sessions were conducted, and students earned one point for each session in which they completed at least one lesson. To encourage habituation, a reflective questionnaire activity was conducted after each lesson. Furthermore, to delve into the psychological factors influencing the learners, we administered 83 questionnaires related to International Posture and Self-Regulated Learning before and after the lessons. Additionally, semi-structured interviews were conducted twice, once at the mid-term on June.

3.2.2 Questionnaire

The instrument for our questionnaire study is given in Table 1.

Table 1: Instrument for our Questionnaire Survey

Factors	Question No.
International Posture (Section.1)	
Intercultural approach (-avoidance) tendency	1-7
Interest in international vocation	8-13
Ethnocentrism	14-18
Interest in foreign affairs	19-22
Having things to communicate	23-28
Willingness To Communicate (Section.2)	1-20
Self-Regulated Learning (Section.3)	
Time management	1-5
Aversiveness of the task	6-11
Sincerity	12-17
Personal initiative	18-23

3.2.3 Reflection Questionnaire

As an everyday reflection and foreseeing intervention, we set up the following questions on the web. It took only a few minutes to complete the forms every time.

Q1. How far did you get this week? If you did not do well, please write down the reasons why you did not do well as a reflection. (open-ended question)

Q2. What percentage of the original plan did you achieve? (0, 20, 40, 60, 80, 100)

Q3. How far would you like to proceed next week? Please check the schedule length and set your own goals. Include as much as possible what events are likely to happen. (open-ended question)

3.3 Results

Figure 1 below illustrates the outcomes of students' learning behaviors. A student receives a "one" when they complete at least one assignment every two or three days. The total number of periods in the assignment design is 39 (equivalent to 13 weeks), and the maximum achievable learning progress is 39 for students who consistently maintain this level of engagement.

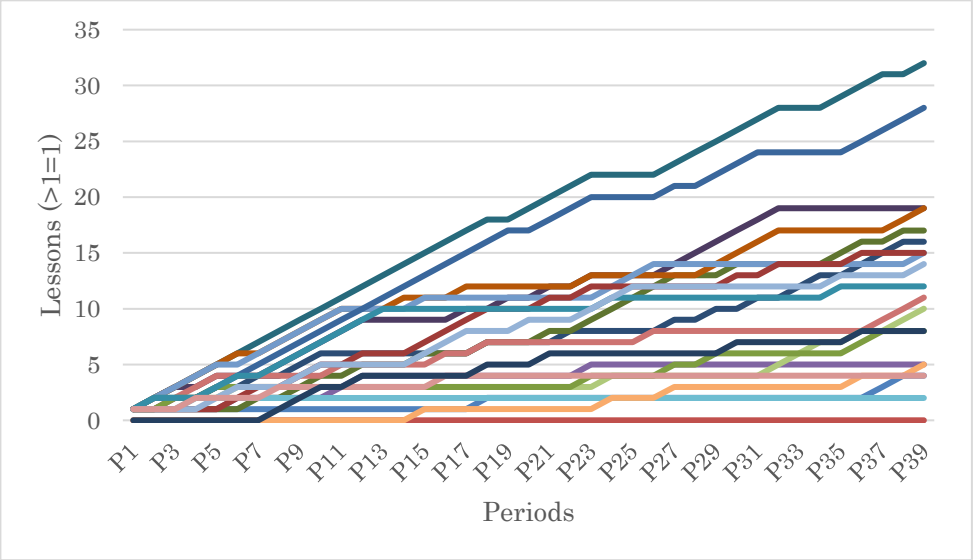


Figure 1: Learning Progress

Figure 2 below illustrates the total number of lessons that students have completed. Since they are allowed more than one lesson per period, it is naturally expected that a student will catch up with the schedule when they are not consistent due to certain reasons. In fact, some students have completed more than 39 lessons, which is the target for achieving a goal in this project.

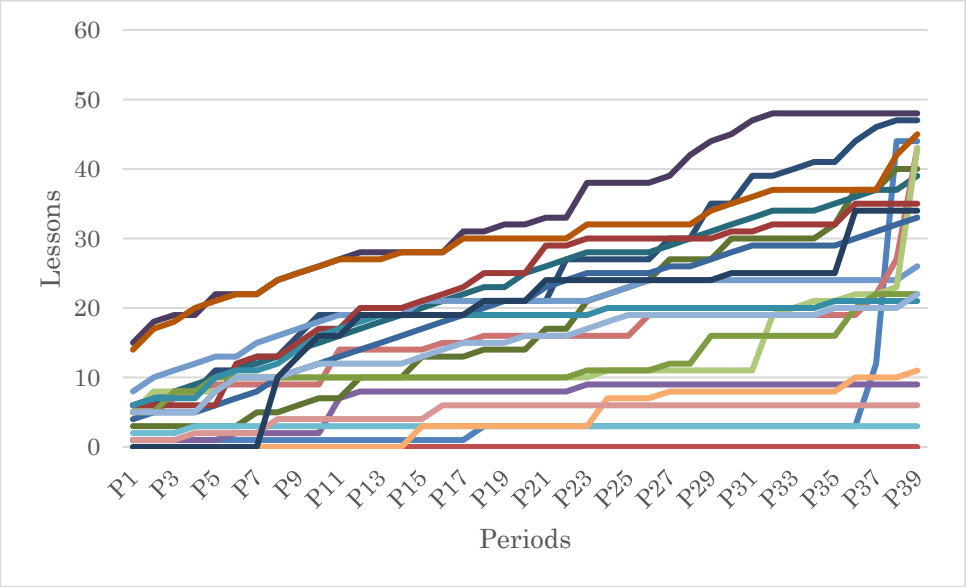


Figure 2: Total Lessons

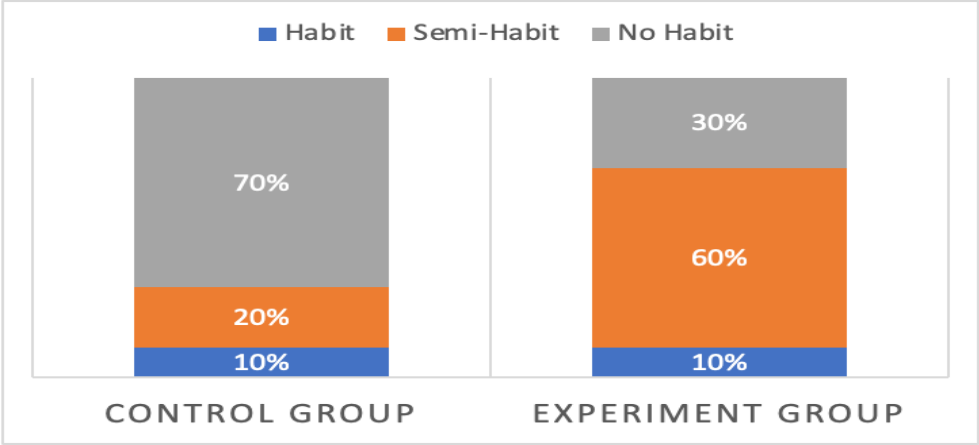
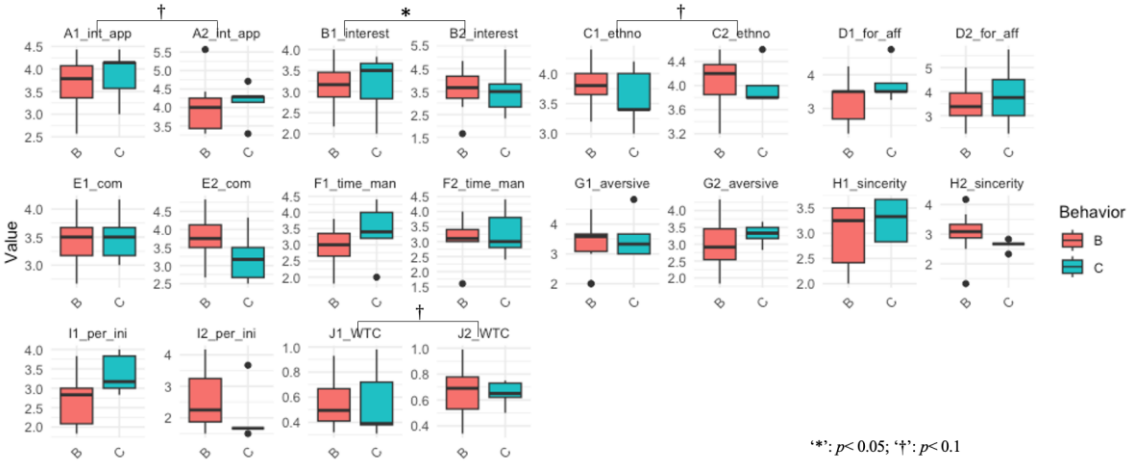


Figure 3: Percentage of Students Belonging to Each Type

Figure 3 illustrates the difference between the control and experimental groups concerning the percentage of students in each behavior type. As depicted in the graph, there was a decrease in the number of individuals classified under "No Habit," while there was an increase in those categorized as "Semi-Habit" within the experiment group. Only two individuals achieved a learning habit by completing 70% or more of the lessons, with a total of eight individuals meeting the target of 39 completed lessons. This suggests that the reflection and foresight activities in the classroom effectively enhanced self-regulated learning for the "No Habit" and "Semi-Habit" groups.



Note. Intercultural approach (-avoidance) tendency (*int_app*); Interest in international vocation (int_voc); Ethnocentrism (ethno); Interest in foreign affairs (for_aff); Having things to communicate (comm); Time management (time_man); Aversiveness of the task (aversive); Sincerity (sincerity); and Personal initiative (per_ini)

Figure 4: Pre- and Post- survey

Figure 4 presents the results depicting changes in learners' psychological states before and after the project. Groups A, B and C represent "Habit", "Semi-Habit", and "No-Habit", respectively. Due to the Habit group's limited size, comprising only two members, we opted to exclude it from the statistical analysis. The left side illustrates the outcomes of the pre-test, while the right side showcases the post-test results. Three factors demonstrate statistical

significance or a noteworthy trend, represented by "*" or "†". When we compared the two groups based on the factors of International Posture, Willingness to Communicate (WTC), and Self-Regulated Learning using the pre-survey, we did not observe significant differences in International Posture. In specific items such as "Interest in international vocation," "Interest in foreign affairs," and "Having things to communicate," the A group reported lower values. Nevertheless, the C group yielded the highest results for the "Interest in foreign affairs" item. In terms of WTC, the A group exhibited higher values in nine out of twenty items compared to the other two groups. Concerning Self-Regulated Learning, the A group displayed lower values in "Task aversiveness" and "Sincerity," suggesting heightened self-regulated learning abilities due to lower aversiveness and higher sincerity when compared to the other two groups. With regard to personal initiative, the group recorded the lowest results. Individual changes are visually represented in the figure below as a spaghetti plot.

Individual change is given in Figure 5 below as a spaghetti plot.

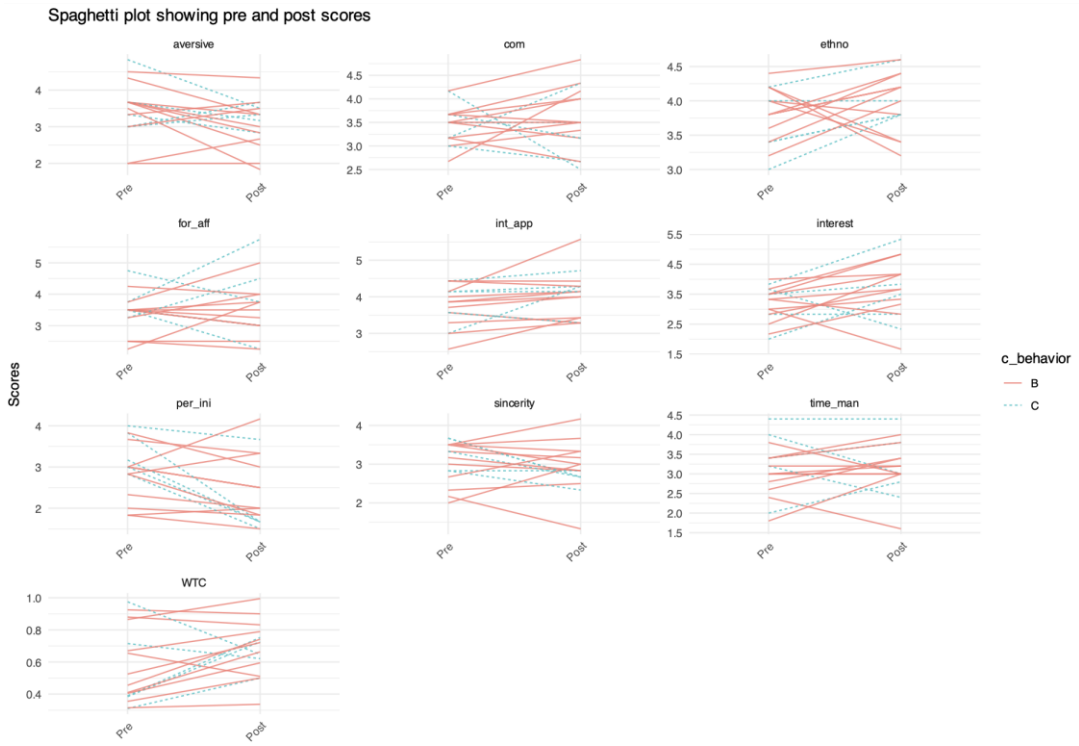


Figure 5: Pre- and Post- survey

In general, the Semi-Habit group demonstrates an increase in the WTC and other motivational factors. This suggests that during the project, their awareness of these psychological factors was strengthened, potentially influencing learning behavior.

A comparison between the results of the pre-survey and post-survey was conducted. In the A group, the number of members reduced from 2 to 1, rendering the data beyond the scope of measurement. Regarding international orientation, both the B and C groups exhibited improvements in all items except "having things to communicate." Concerning WTC, the B

group showed improvements in 17 out of 20 items, while the C group showed improvements in 13 items, although none of them reached statistical significance. In the case of self-regulated learning, all items in the C group experienced a decrease in values. This suggests that a strong correlation between psychological factors and habits was not observed.

As a result, it becomes evident that there are no significant differences between the three groups. This indicates that, despite minor variations in psychological factors, differences in learning behaviors exist.

4 Discussion

In terms of Research Question 1, the educational intervention involving the introduction of weekly reflection activities, as observed in the current experimental group, led to an increased number of learners displaying learning habits compared to the control group. Furthermore, the percentage of learners lacking learning habits decreased significantly. Hence, the task design demonstrated its effectiveness for learners without established learning habits. Nevertheless, similar to prior studies, it is imperative to explore the efficacy of alternative approaches for online learning tasks, such as incorporating quizzes and grading methods in addition to goal-setting and reflection activities.

With regard to the psychological factors addressed in Research Question 2, no notable differences were detected among the three groups. Regarding the changes in psychological factors outlined in Research Question 3, while there were improvements in international orientation and willingness to communicate (WTC), these improvements did not reach statistical significance. Furthermore, specific aspects of self-regulated learning exhibited declines, implying that there were no substantial alterations in psychological factors before and after the implementation of activities aimed at fostering learning habits. As for Research Question 4, insights gained from interviews on learning behaviors and psychological factors included statements like, “Completing a task in 2 or 3 days is challenging, but it becomes more manageable when spread over a weekly schedule” and “Maintaining consistent learning during busy academic or university events is a challenge.” Based on these findings, it is worthwhile to consider the effectiveness of revising the unit period for interventions geared toward promoting self-regulated learning, aligning with the concept of ensuring learning continuity. Additional analysis and discussion will be undertaken as data are compiled and compared with learning behaviors in the future.

References

[1] A. Usami, “Survey on Self-directed Learning, E-Learning for English Language Learning, and Study Habits,” Bull. Institute for Educational Computing and Research, vol. 25, 2016, pp. 4-7.

[2] Y. Goda, M. Yamada, T. Matsuda, H. Kato, Y. Saito, and H.Miyagawa, “Categorization of Learning Behavior in e-Learning,” 2013, pp. 867-868;

[3] R. Yaguchi and Y. Ono, “Procrastination Awareness and Learning Behavioral Types in an Online Learning Environment,” IIAI Letters on Informatics and Interdisciplinary Research, vol. 2, 2022; doi:10.52731/liir.v002.049.

[4] A. H. Chun Chu and J. N. Choi, "Rethinking Procrastination: Positive Effects of 'Active' Procrastination Behavior on Attitudes and Performance," The Journal of Social Psychology, vol. 145, no. 3, 2005, pp. 245-264; doi:10.3200/SOCP.145.3.245-264.

[5] B. J. Zimmerman, "Self-regulation involves more than metacognition: A social cognitive perspective," Educational Psychologist, vol. 30, no. 4, 2010, pp. 217-221, doi:10.1207/s15326985ep3004_8.

[6] T. Yashima, "International Posture and Foreign Language Learning Motivation – Reevaluation of the Social Psychological Theory in the Japanese EFL Context -," Kansai University Foreign Language Education and Research, vol. 1, 2001, pp. 33-47.

[7] T. Yashima, "Willingness to Communicate in a Second Language: The Japanese EFL Context," The Modern Language Journal, vol. 86, no. 1, 2002, pp. 54-66, https://doi.org/10.1111/1540-4781.00136.

[8] J. B. Rotter, "Generalized expectancies for internal versus external control of reinforcement," Psychological Monographs: General and Applied, vol. 80, no. 1, 1966, pp. 1-28.

[9] H. Sugiwaka, "The Assessment of Individual Differences in Self-control in Daily Life," The Japanese Journal of Psychology, vol. 66, no. 3, 1995, pp. 169-175.

[10] J. C. McCroskey, "Reliability and Validity of the Willingness to Communicate Scale," Communication Quarterly, vol. 40, no. 2, 1992, pp. 16-25.

[11] M. Morita, I. Enokida, T. Onita, T. Sakaue, K. Kusanagi, R. Yoshikawa, "Promoting WBT self-study through voice mail," The Chugoku Academic Society of English Language Education, vol. 47, 2017, pp. 63-72. https://doi.org/10.18983/casele.47.0_63

[12] K. B. Nielson, "Self-study with Language Learning Software in the Workplace: What Happens?," Language Learning & Technology, vol. 15, no. 3, 2011, pp. 110-129.

[13] C. Wladis, A. C. Hachey, K. Conway, "The Role of Enrollment Choice on Online Education: Course Selection Rationale and Course Difficulty as Factors Affecting Retention.", Online Learning, vol. 18, no. 3, 2014, DOI: https://doi.org/10.24059/olj.v18i3.391.

[14] M. Morita, Y, Takahashi, "Effects of Different Instructions on Online Vocabulary Learning," vol. 31, 2020, pp. 241-254.