

# An ICT-based Approach to English Education

Michihiro Yamane\*

## Abstract

### Introduction

According to Benesse Education and Research Development Center (2008), the hours allocated annually to English education in Japanese schools are: 267 hours in junior high school; 362 hours in high school; and 90 hours in university as a compulsory subject. As their reports suggests, hours spent in university are considerably limited. This paper discusses how a use of ICT can generate influence over students' motivation to positively engage in their daily out-of-class learning activities, which in turn will increase hours for their learning of English. An attempt was also made to create periodic updates on students' grade in progress by electronically notifying them of the accumulated points earned for their grade as part of formative evaluation process to stimulate students' awareness of the involvement in their class and out-of-class learning process.

### Keywords

ICT, Smartphones, Online Grade Update

## I . Introduction

To visualize a stereotype of university students in Japan, Nagatomo (2012) pointed out that there was a prevailing notion that socialization such as engaging in club activities and doing part-time jobs was more important than academic study for the students, and further mentioned that "students might be reluctant to continue to study once they have overcome the hurdles of university entrance examinations" (p.17). With a view to such students' mentality together with the limited hours spent in university for English education, and furthermore the fact that English is becoming the world's common language in various areas such as business, politics, entertainment, etc. it is important to review, explore and consider what can be done more effectively to enhance university students' English skills before they graduate from schools and become members of workforce in society. In this regard, students' engagement in out-of-class activities might

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\*やまね みちひろ : 大阪国際大学短期大学部講師 (2016.6.17受理)

be one of the key factors to help compensate the limited hours in class, and this might be realized through enhancement of students' motivation and willingness. Lai, Zhu, and Gong (2014) defined the quality out-of-class learning as an effective means to contribute to overall learning experience through their research study. A question is how students can enhance their motivation so as to autonomously engage in out-of-class educational activities.

In Japan, penetration of smartphones has largely grown since the introduction in 2008, and according to the report published by Recruit Marketing Partners (2015), the ownership of smartphones by high school students reached 82.2 percent in 2014, showing a substantial increase from 14.9 percent in 2011. In the educational sector, there have been various efforts exerted to utilize new technologies for educational purposes, and as part of the efforts, the use of smartphones in university is gradually expanding. Leis, Cooke, and Tohei (2014) verified an increase in the hours of study on the part of students and many related advantages brought about by the use of smartphones in English class. Thornton and Houser (2005) confirmed that smartphones were useful in university students' learning of vocabulary and idioms. Itoyama (2013) proposed an idea on integration of voice-assist functionality of Siri technology into English learning.

It has been often discussed that the national characteristic of Japanese is such that they do not express their emotions publicly (Cates and Kurihara, 2014). This inherent national characteristics of Japanese has remained unchanged for many years behind a façade of its westernization; and this characteristic is often conspicuous in school classes. Students are generally shy and subdued. They do not willingly raise their hands to express their opinions for fear that they may be embarrassed if they were wrong. Such aspect of students' behavior in class could be one of the negative factors which obstructs potential for development of their English proficiency. However, it does not necessarily follow that Japanese students do not have willingness to present their ideas or opinions. Rather, it may be assumed that they indeed have and want to share their opinions but are facing emotional dilemma in exposing themselves because of shyness. Based on the above assumption being correct, this research project has proceeded with application of smartphones for the students' out-of-class learning activities and has examined possible enhancement of students' motivation and willingness to participate in the study of English, and furthermore tried to analyze how such activities can compensate students' subdued class participation.

## II . Research Questions

1. Does the use of smartphones for out-of-class English practices contribute to enhancement of language learning motivation and improvement in language

- proficiency?
2. Does the focus-on-forms methodology work effectively with smartphone application to improve Japanese EFL students' basic grammatical command?
  3. Does an online periodical updates of students' grading status ("Online Grade Update") promote higher awareness of their language learning activities?

### **III. Method**

#### **1. Settings**

This research project was carried out at Osaka International University and (junior) College.

#### **2. Participants**

Participants were a total of 44 students; 28 university students and 16 junior college students. All 44 participants were the students of English Writing I course, but university students and junior college students were taught in separate classrooms in separate periods. Of 44 students, 42 students had smartphones and two had cellular phones, and eight had computers at home. In this research project, the junior college students were assigned to Treatment Group (Group A) and the university students were assigned to Contrast Group (Group B). The students were informed of the research project and it was acknowledged by the students that the result be used for the paper and made public so long as it showed only general trend and the individual name remained anonymous.

#### **3. Procedures**

##### **3.1 Pre-Test and Preliminary Lessons**

The research was conducted during the first semester of 2015 starting from April through August covering 15 weeks' class, and in the first week, a paper-based pre-test containing 40 multiple-choice questions on basic grammar and 30 basic English composition test was administered to both Group A and B to examine participants' level of English command in grammar and to evaluate their fundamental ability to write short English sentences. Despite the fact that the pre-test were fairly basic, the average scores of both groups were between 50 and 60. As such, the result of the pre-test revealed that it would be highly desirable for the participants to go through basic grammatical training before they would start a regular writing curriculum with the given textbook, and accordingly, for the next four weeks, the special arrangements were prepared for basic and intensive grammar lessons equally to both Group A and B, which replaced the originally planned contents in syllabus. After the four weeks' special lessons, the class resumed to the original plan with the text book.

### 3.2 Daily Assignments

The special treatments were given to the participants of Group A, which consisted of the following two approaches; (1) ICT-based out-of-class activities, and (2) On-Line Grade Updates. The former approach was intended to be accomplished basically by use of smartphones where applicable. The out-of-class activities were based on the focus-on-forms methodology which basically required participants' repetitive practices of basic grammar and writing of composition. And the out-of-class activities with smartphones were deployed in the two developmental phases.

The first phase was a quiz of 10 multiple-choice questions covering basic grammar questions and it was sent daily to the participants on every weekday, every week. The program was designed with Google Form application software in such a way that the participants could see their score results right away upon submission of their answers, which was instantly processed and returned to them automatically by the program, and furthermore, the participants could repeat the same quizzes as many times as they wanted to pursue the perfect score. Also, Google Form provides not only a collection of data in spreadsheet format but it also gives an outline of summary of answers in a statistically analyzed graph format for an easy review. To follow the results of the daily assignments for the week, some 10 to 20 minutes' briefing was made at the beginning of every class to show participants the tendency of their commonly made errors and to provide the instruction for the correction.

The second phase was not based on Google Form, but it was a simple email interaction between the teacher and the participants for the practice of English composition. The second phase was originally planned to start around the middle of the semester when the participants were expected to have reached the correction rate of 90 percent of the first-phase-quizzes. However, because of variations in the acquisition level of the participants, Group A had to be split into two teams. Beginning in the 10th week of the semester, eight participants were promoted to the advanced level to start the second phase, while the remaining eight participants had to continue the repetitive practice of the similar multiple-choice quizzes until they met the required criteria of the 90 percent correction.

The second phase proceeded with daily emails on weekdays containing 10 simple and short Japanese sentences which participants were required to translate into English within the day they received the assignments. Accordingly, the corrections were made as required and sent back to the participants. The rule was that the participants had to re-write the entire sentences three times when they made any errors and received the corrected translations. For the majority of the participants, this second phase also employed smartphones just like the first phase.

### 3.3 Online Grade Update

The second approach of the treatments, namely, the Online Grade Update, was a periodical notification to participants of their accumulated points earned for the grade, and the objectives of the treatment was to raise participants' awareness of their class engagements as part of formative evaluation. With respect to assessment and evaluation, the participants were instructed that they would earn one and half points when they completed all of the daily assignments for the week., which will eventually accumulate to 20 points for the entire semester if there were no missing of the assignments (one and half points multiplied by 13 weeks). They were also told that allocation of two points per week were given when the participants attended each class with positive engagements, which could add up to 30 points for the semester. The participants were updated on the fifth and 10th week of the semester with their accumulated points so they would know where they stood on the grading status before the final examination took place. The Online Grade Update was created by Google Spreadsheet and shared with participants in the Google Drive, which was made accessible by participants' smartphones.

### 3.4 The Final Stage of the Research Project

At the final week of the semester, the paper-based post-test was administered to both Group A and B as part of the final examination. Participants of both groups were allowed to bring in their notebooks in which they took their own individual notes during their class attendance. Also, at the final week, a questionnaire survey was administered to the Group A to examine if there were any changes in the mind and attitude of participants toward learning of English as a result of the two treatments. The purpose of the survey was to elicit the participants' uninhabited opinion on efficacy of smartphone application to carry out their daily assignments as well as their perception of Online Grade Update.

## 4. Analysis

The pre-test and post-test adopted similar multiple-choice questions on basic grammar, which focused on verb forms such as conjugation and tenses. As earlier mentioned, the pre-test revealed that participants needed to relearn and acquire better understanding of basic grammar before they would start regular writing classes. Accordingly, the special intensive lectures on basic grammar were given for the first four weeks of the semester equally to both groups. The major difference between the two groups lie in the treatment given to the Group A: namely, (1) smartphone-based out-of-class assignments which were given every weekday to the participants of the Group A, and then the weekly follow-up on the daily assignments at the beginning of the lecture, whereby frequently occurred errors of the week were addressed and shared with the participants; and (2) periodic Online Grade Update which was made accessible to the participants over the Intranet

system of the school; the update was made on the fifth and 10th week of the semester and individually shared with each participant.

#### 4.1 Daily Assignment

First, their engagement of daily assignments were analyzed every day with Google Form application software. White and Mills (2014) pointed out that university students in Japan have not had extensive experience using mobile phones other than for entertainment or personal communication purposes, but at the same time some 78 percent of students considered smartphones useful or very useful tools for their language study. In this perspective, it could be considered that smartphone application might work as an effective tool as part of English education if such application could be integrated into participants' daily activities to fit in their lifestyle without creating a feeling of forced burden on the part of the participants. The database generated in the form of Google spreadsheet provided the information on not only the names and scores of the participants who submitted the daily assignments but also on such incidental data as the number of times each participants repeated to tackle the same quizzes in an effort to reduce the errors and improve the scores. The data showing such participants' diligent and persistent effort was considered as part of overall evaluation for the analysis in addition to their scores.

#### 4.2 Online Grade Update

Second, the Online Grade Update notified the participants individually when each update was completed. In the Online Grade Update, comments or advice was given to each participant to encourage her progress in the grade. The follow-up questionnaire survey was intended to examine how the Online Grade Update affected the participants' motivation to pursue better grade, and the degree to which the evaluation system affected the continuance of daily performance of assignments in addition to checking of participants' perception of smartphone-based assignments.

#### 4.3 T-Test

The possible effect generated by the above treatments was examined by t-test analysis which compared the groups A and B in improvement of scores between pre- and post-test.

## IV. Result

### 1. Comparison of Pre- and Post-Test Scores

In order to identify the difference in the progress of participants' understanding of English grammar between Group A (treatment group) and Group B (contrast group),

statistical hypothesis testing methodology was employed. The actual calculation was done with Microsoft Excel 2013. As a result of the pre-test, Group A made a mean score of 54.4 ( $SD = 12.44$ ), while Group B had that of 52.1 ( $SD = 16.22$ ). At that point, the difference in the mean score between the two groups was 2.3, and there was no significant difference seen in the relation ( $P = 0.595$ ). In contrast, as a result of the treatment given to Group A during the semester, the post-test yielded quite a different numbers. The mean score of Group A showed 83.0 ( $SD = 13.50$ ) and that of Group B showed 74.4 ( $SD = 13.77$ ), which revealed a largely increased difference of 8.6 in the mean scores between the two groups, and furthermore, the analysis suggested a significant level of difference ( $P = 0.044$ ) in their relation.

As regards out-of-class assignments to Group B, homework was assigned to follow-up classes mainly with exercise questions provided in the textbook. The frequency of the homework was usually biweekly, and the participants were instructed to present their answers in the class of the following week, but not very active participation was observed in the achievement of the homework. On the other hand, all of the 16 participants of Group A tenaciously adhered to accomplishment of daily assignments during the entire semester including multiple-choice quizzes and exercise of English compositions. Evidently there was clear difference in the amount of hours spent for out-of-class English learning experiences between the two groups. It was in this context, that Group A largely outperformed Group B in the score of the post-test. Judging from the result, an assumption could be made that the smartphone-based learning activities did contribute to the increased hours of study of English and improved proficiency in English of the participants in Group A.

## 2. Participants' Impression

The Table 1 shown in the previous section indicated a substantial effect on Group A's improvement in the post-test scores. It however did not represent the answer to

Table 1 Comparison of Pre- and Post-Test Scores between Group A and Group B

	Group A (n=16)		Group B (n=28)		t (42)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Pre-Test	54.4	12.44	52.1	16.62	0.535	0.595
Post-Test	83.0	13.50	74.4	13.77	2.109	0.044
	28.6		22.3			
	153%		143%			

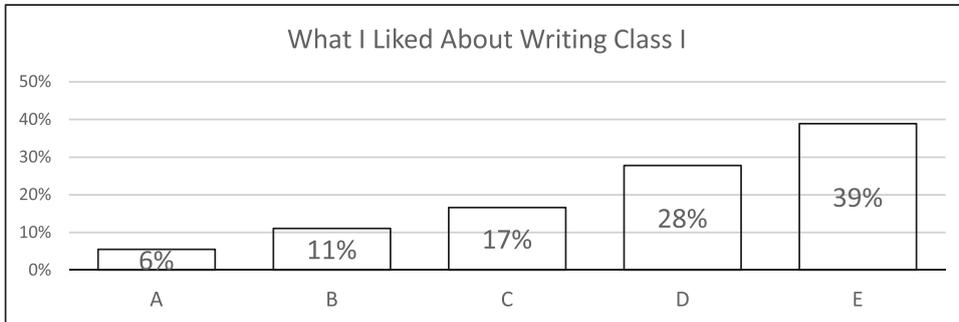
Note: significance level = 0.05, two-tailed,  $df = 42$

a question as to whether or not out-of-class smartphone experiences did contribute to enhancement of their motivation. At the beginning of the class of the first week, it was articulated to the participants of Group A that there would be smartphone-based activities starting from the 2nd week through the 14th week of the semester, and that they could earn and accumulate one and half points each week in their grade if they successfully accomplished the week's entire assignments without missing any one day. In this context, it might be hypothetically interpreted that the participants did the homework simply because they wanted to gain grade points based on their extrinsic motivation. At the same time, however, another assumption could also be made that they continued the out-of-class activities by subconsciously accepting them as part of their daily routines as they fit into their lifestyles in the course of repeated practices of the assignments.

To explore and identify validity of this assumption, a set of questions was prepared in the survey addressed to Group A at the last week of the semester, whereby the participants were asked about their impression, satisfaction, preference and/or their perceived positive aspects of the class. The responses from the participants did not show much of variation. For the purpose of analysis, the responses were categorized into groups of similar nature. The result of the categorization was shown as in a form of bar graph created in the Table 2, which confirmed that a majority of participants were satisfied either with the opportunities to relearn basic grammar or with frequently engaged out-of-class learning experiences using smartphones through grammar quizzes and writing of compositions.

In this research project, both in-class lecture and out-of-class activities were proceeded based on a focus-on-forms methodology. By referring to the research study conducted by the Japanese government, Tajiri (2014) pointed out that the Japanese third-year junior high school students considered English as the most difficult and disliked subject, and he analyzed that this trend was attributable to English education in Japan where a school taught students how to understand English but students did not spend time out-of-class to practice and memorize what they learned in school for the purpose of internalization of English, and without this step they would not be able to move on to the next level of communicating with people in English. He argued that there was a tendency that the students started finding difficulty in English as early as the summer of their first year in junior high school, and then found themselves getting confused in linking and other verbs after the summer. If many students remained this way through junior high and high school, it might not be very realistic to start educating the university students with classes requiring high level of creative work in English. In this perspective, focus-on-forms methodology to let them relearn basic grammar as a foothold for the development of their English skill might not be a wrong direction to proceed. The key issue had

Table 2



	*No.	Responses
A	1	I gained new vocabularies.
B	2	Not sure.
C	3	The teacher's explanation was clear and understandable.
D	5	I liked the use of smartphones and daily learning experience.
E	7	I liked the class because I was able to relearn English grammar.

Note: \*No. represents the number of responses; There were two overlapped responses in C and D, so the N added up to 18, but the actual number of respondents remained 16 in total.

been how to realize continuous out-of-class activities to enable extra hours of work to be spent for learning of English, and this research revealed the possibility that smartphone application might work as one of the solutions to enhance the motivation of those having interest in gaining better proficiency in English.

### 3. Effect of Periodical Online Grade Update

This chapter has so far provided a review on the result of analysis on the enhancement of students' motivation to learn English as well as improvement in the score of post-test over pre-test through smartphone-based out-of-class activities, and also the effect of focus-on-forms methodology in association with smartphone application. Moving forward on to the third question on the effect of the Online Grade Update, the questionnaire was conducted to specifically ask the participants as to how they valued the Online Grade Update or how important they felt the system was in relation to their continued engagements in the smartphone-based learning activities. Likert five scale measurement was employed, where five was the most important and one was the least important. The survey revealed that all respondents agreed that grading methodology was very clear and they liked the way periodical updates were made available to them because it was convenient and they would know exactly where they stand in terms of their earned scores each time they were informed. Furthermore, it was confirmed that everyone

basically shared the same opinion that sharing of grade data electronically did not give them any concern or anxiety at all as they believed that their data was securely stored and the confidentiality was maintained. For this questionnaire, only 12 responses were available out of 16 participants. The overall rating is shown in the Table 3.

The second column from the left of the Table 3 shows the ratings on the value of Online Grade Update, which was evaluated by the participants with respect particularly to perceived rise in motivation to perform out-of-class assignments. Of 12 participants, 11 evaluated the system positively by rating either five or four, while one expressed feeling of uncertainty about the efficacy.

#### 4. Concurrent Analysis

The correlation analysis was conducted by cross-referencing the overall rating of the Online Grade Update with the Group A's score gain (the points increased from the pre-test to post-test) and improvement ratio (percentage of post-test score over pre-test score). In other words, the correlation analysis related the improvement ratio (%) of Group A's post-test score over pre-test to the level of participants' evaluation of the periodical Online Grade Update. The results are shown in the scattergram of Table 4. The analysis revealed the coefficient of  $-0.28$  ( $r = -0.28$ ) which indicated that there was a weak level of negative strength in the correlation between the two variables.

To summarize, the responses identified participants' perception of periodical Online Grade Update as being valuable, however, it raised some question regarding the result of

Table 3 Rating on the value of Online Grade Update compared with test results

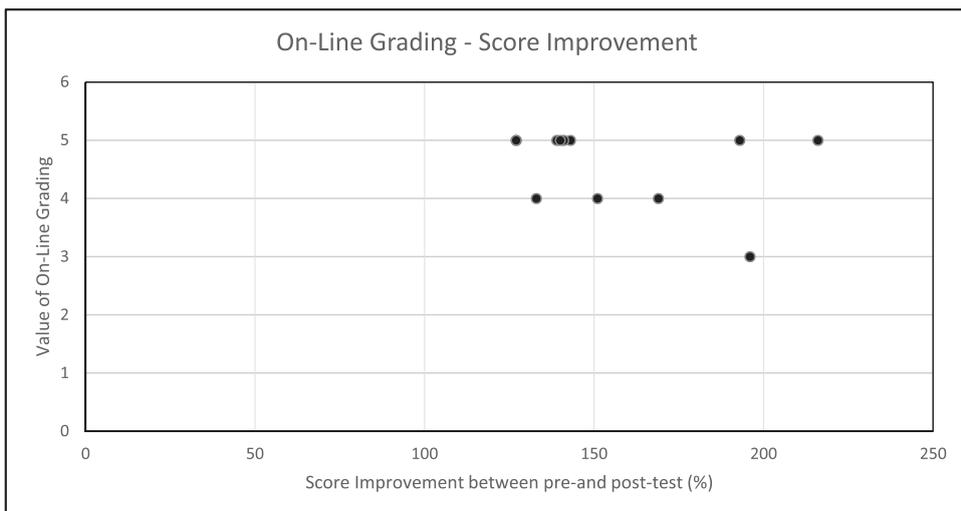
Participant	Online Grade	*Pre-test score (A)	*Post-test score (B)	Score gain (B - A)	Improvement ratio B vs. A (%)
1	5	63	90	27	143
2	5	66	93	27	141
3	5	61	85	24	139
4	5	44	95	51	216
5	5	71	90	19	127
6	5	56	71	15	127
7	3	46	90	44	196
8	4	66	88	22	133
9	5	24	46	22	193
10	4	49	83	34	169
11	4	63	95	32	151
12	5	68	95	27	140

analysis showing negative strength of correlation between participants' improvement in the test score and their perception of the importance of Online Grade Update.

## V. Discussion

The main objective of this research project was to investigate and examine to see if the following two treatments could be a contributor to enhancement of students' motivation to study English and thus to improvement in their English proficiency: (1) application of smartphone-based out-of-class activities for English learning experiences; and (2) development of the Online Grade Update for periodical notification of participants' progress in the grade. Both in-class lecture as well as out-of-class assignments activities were conducted based on focus-on-forms methodology. It is important to be reminded here that focus-on-forms teaching style sometimes could be perceived as being old-fashioned, one-sided or teacher-centered pedagogical format which might create less encouraging atmosphere on the part of students. Lai et al. (2014) stated based on their research interview with middle school EFL students in China, that the participants constantly called the in-class English learning "boring" as it was heavily form-focused, and reported that when the in-class instruction is heavily form-focused, the degree to which out-of-class activities focus on meaning and complement in-class experience was an important characteristics of quality out-of-class learning experience (P.12). It is a valuable analysis and that good blending of focus-on-forms and focus-on-meaning instructional styles could bring about an effective learning experience for students with

Table 4



a view particularly to complementation of the two educational styles. At the same time, a comprehensive deliberation as well as in-depth consideration may need to be placed to ensure the optimal integration of the two pedagogical styles as the degree of efficacy to which such integration extends will most likely depend on regional characteristics, socio-cultural backgrounds and developmental stages of EFL students. As stated earlier, the frequently made errors in the assignments of each week were analyzed and then pointed out and corrected at the beginning of the class held in the following week. Then the same or similar quizzes were intentionally incorporated in the assignments of the subsequent week. Through these repetitive practices, the participants' scores or the rate of correction progressively improved, which hopefully helped the participants gain confidence in English to some degree. As a consequence, this project found the possibility that participants' frequent out-of-class engagements in English learning activities would contribute to raising of participants' awareness of positive involvement in the class activities, which in turn may encourage the participants to remain active in pursuing continued engagement in the assignments, all of which may be viewed as generation of a synergy effect to bring about a positive cyclical pattern in the behavior of the participants. It may be argued that the participants' active engagements in out-of-class activities could have been a result of their extrinsic motivation to earn weekly score of one and half points. "Rewards clearly tends to increase performance, and this is because they increase total motivation, extrinsic and intrinsic" (Ledford, Gerhart, and Fang, 2013, p.27). The questionnaire with 12 responses proved that a majority of the participants construed the Online Grade Update as being a positive factor for their continuance of out-of-class activities, and, given the above statement clarified by Ledford et al., rewards are the important factor for the enhancement of motivation.

## VI. Conclusion

This research project tried to analyze the efficacy of pedagogical strategy to enhance students' motivation to learn English by the application of smartphones and deployment of Online Grade Update. The project was pursued by way of quantitative analysis over comparative study of Group A and B and the questionnaire survey directed toward the participants of Group A. The analysis proved a significant difference in the improvement of the post-test scores over the pre-test scores between the two groups, whereby Group A, the treatment group which engaged in smartphone-based learning activities clearly outperformed Group B, the contrast group. This outcome explains that application of smartphones possibly made a substantial contribution to participants' progress in acquiring English proficiency, which could lead to a certain inference concerning representation of some positive psychological involvement on the part of participants

such as enhancement of their motivation to study English, a rise in the awareness of belongingness to the class activities. A response to the questionnaire confirmed that a majority of participants was satisfied with the opportunity to relearn and get better understanding of English grammar and the use of smartphones for their everyday learning experience, and equally importantly, no one in the Group A expressed any negative impression on their experience of in-class or out-of-class activities. This could suggest that even though both in-class instruction and out-of-class practices were based on focus-on-forms methodology, such as repetitive grammar exercises, learning of syntax, memorization of vocabularies, etc., the methodology might be accepted by students if it was applied in the right context.

The Online Grade Update was expected to play an important role in raising participants' awareness of their participation in class activities by periodically updating their latest grading status. As the responses to the questionnaire revealed, there were positive indications given by a majority of participants to support the value of the system, and there were no negative feeling expressed by any of the participants regarding the system. On the other hand, this research project identified negative strength of correlation between participants' improvement in the test score and their perception of the importance of Online Grade Update. One of the possibilities for the result may lie in the fact that the number of participants for the correlation analysis was considerably limited. And this result calls for more in-depth exploration to be pursued to ascertain the real efficacy of or the necessary improvement for the approaches for the future.

Furthermore, there are following other limitations on this project:

1. Group A and B were not evenly matched in the class sizes from a standpoint of carrying out fair comparative study. That is, Group B held 28 participants when Group A held only 16 participants. Moreover, the total number of 44 participants between Group A and B was a limited number for quantitative statistical analysis like this project. In addition, the vast majority of participants in Group B (25 out of 28) were the second-year students at university, while most of the 16 students in Group A (14 out of 16) were the first-year students at junior college. It is occasionally pointed out that the first-year students may have higher motivation than the second-year or older students because the first-year students are making a fresh start in the new stage of education. For the future study, better arrangements for the size of class and the school year of the participants is desired.
2. Similar quizzes were used in the pre-test and post-test, and the participants were allowed to bring in and refer to their notebooks in the post-test. In this context, it is possible to think that the result of the post-test might have been somewhat different from what was observed should the participants have been prohibited from bringing in their notebooks.

3. The focus-on-forms methodology was applied to both in-class and out-of-class learning activities, and coupled with the smartphone application, it has proven to have worked with certain positive results in the context of fundamental grammar practice including conjugation and tenses of verbs, composition of simple sentences, etc. However, it does not necessarily follow that this methodology will equally work when the academic level moves onto the next level such as writing paragraphs from simple sentences, which will require more creative work than memorization of rules and mechanical and repetitive exercises. The scheme for the smartphone application under this project was designed so as to enable participants to acquire or relearn fundamental grammar without imposing much burden on students, and placing priority on their continuity of engagements. To move step forward from here, designing of a new scheme may be necessary to meet more creative requirements including possible integration of focus-on-meaning methodology incorporating more interactive activities which might entail more sophisticated designing and application of technologies.

The evolution of technologies have been occurring drastically and dramatically at an incredible speed over the past few decades particularly with the advent of the internet. Thanks to those advancements, our lives have been made ever so easy and convenient. And quite a few attempts have been made by both educational and industrial sectors to best optimize the technologies in education. It was in this context that this research project was initiated. Although the project was really a small empirical approach with a readily available free software, some progress was seen to meet the initial objective of finding a way to enhance students' motivation for English learning. From here, further continued efforts will be needed to facilitate promotion of students' out-of-class learning activities to reach the next level of English education.

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