

NOTE-TAKING BEHAVIORS of HIGH SCHOOL STUDENTS

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Abstract- The research investigated the note-taking behaviors of students in terms of the quantity and quality of notes outputted as well as performance in the exit and summative tests. The note-taking behaviors included use of paper and pen, tablet PC- assisted note taking, and not taking down notes. Inferential statistics using t-test and Chi-square were used to determine the significant difference between the use of paper and pen and tablet PC in delivering better quantity and quality of notes. Analysis of Variance (ANOVA) was used to compare the test performances of high school students from the three note-taking options. Correlation coefficient was also done to determine the relationship between the quantity and quality of notes and the students' performances in exit and summative tests.

The results indicated that the students encoding notes on paper and pen covered more lesson items than those using the tablet PC. In terms of the quality of notes covered, there appeared to be no significant difference. The note-taking devices seemed to show no advantage also in terms of students' performances in the tests. Lastly, the quantity and quality of notes seemed to show no differing significance in terms of aiding students perform better in tests.

With these findings, recommendations were offered toward training of students and teachers in the productive use of the tablet PC to create better note-taking environment, toward reviewing existing policies and practice on note-taking as well as technology use in the classroom and toward considering scheduling the conduct of tests at a later date to 'level off the field' for students with varying accessibilities to technologies.

Keywords: Note-taking, Tablet PC, High School, eLearning, Testing

I. INTRODUCTION

Since the launch of the e-learning tool project in High School-A (for privacy reasons, the school's name has been withheld), the whole high school (HS) community has seen changes in the entire teaching-learning landscape. Technologies like the tablet PC have paved the way for changes in the students' role from being information reproducer to knowledge producer. Teachers, too, have shifted from being the 'fountain of knowledge' to being learning facilitators and guides. Technologies themselves were not spared from changing. They, too, have shifted 'gears' in terms of school function. At present, relevant technologies are expected to serve as cognitive tools assisting students and teachers in organizing items, recalling from memory, and creating new knowledge. There is also the change in the mode of instruction with the use of learning management system or LMS like Genyo which serve as a new way of distributing information, and a new platform for social communication and collaboration among learners and between teachers and learners. In addition, this new teaching/learning landscape has shown educators the new learning behaviors among their students. One of them is their digital note-taking activity.

With the rich sources of information made available to everyone both in print and on the web, one must be able to process and understand the data one receives. More often than not, remembering the material one listens to or reads requires the ability to record, organize and retrieve information whenever necessary. Hence, the

importance of effective note-taking cannot be overlooked for the advantages it brings to one's attention span and focus on the task resulting in better comprehension and retention.

The traditional note-taking on paper has been the most available option for learners until the advent of computer use for academic purposes, including note-taking. Aside from the convenience and handiness the tablet PC offers, [1] asserted that it makes notes easily accessible for the students especially in instances when they have to refer back to past lessons without going through piles of papers and keep track of their performance. In addition, they also found that capturing notes of the teacher's board work on camera allows the learners to share and discuss files online, hence increasing their comprehension of lessons. Although note-taking may have received a new approach among the learners using the tablet PC, it remains to have the essential learning benefits of the traditional way and more. When used properly, it more likely increases attention, delivers recall, and improves test performance.

II. STATEMENT OF THE PROBLEM

Recent developments in the use of computers, particularly the prescribed tablet PC, however, show that a good number of teachers in High School-A are uncomfortable with allowing the students to use the gadget for note-taking purposes. In separate Grade Level meetings of Grades 9 and 10 faculty members, the teachers identified the following as potential distractions with tablet PC use that can hamper the students' learning: opening of unrelated online applications in the course of a discussion; taking pictures of a teacher's lecture instead of taking notes during a discussion; and, audio recording instead of listening intently to the lesson as reported in [4] and [10]. Hence, traditional note-taking on paper continues to be the mode during class lectures and discussions.

Much has been written about academic note-taking, but a good number of them have shown its benefits related to note-taking on paper. While recent studies have been done on note-taking on paper and on the computer, not many are specific to the use of the tablet PC as a note-taking device during class lectures and discussions. In this study, it is the researchers' intention to show that using the tablet PC for note-taking in class is just as beneficial as the paper and pen option. The results should enable the teachers to establish their confidence in the ability of students to take notes on the tablet PC when the option is presented to them. It is hoped that the findings and recommendations in this study will greatly benefit High School A's undertaking of the e-learning tool project in the long-term as these can either challenge or reinforce the faculty members and administrators' existing beliefs related to the issue of the tablet PC as a note-taking device.

Finally, it is hoped that this study will open avenues for the researchers to pursue further research projects on a wider scale and investigate how the e-learning tool can be maximized in the teaching-learning process.

In light of the present situation in High School A, this study aims to explore the effectiveness of note-taking during class discussions using a tablet PC as compared to note-taking on paper. In particular, this study shall address the following questions:

1. Is there a difference between note-taking with paper and pen and note-taking with the tablet PC?
2. What is the relationship between test scores and the students' note-taking behavior?

III. THEORETICAL/CONCEPTUAL FRAMEWORK

Research regarding note-taking behaviors and related devices like the tablet PC are abundant. Although, many seemed to show contrasting reports. First, [7] in their study of note-taking, memory and media environments, found out that paper remains to be a better tool at making students more efficient in covering most important lesson items. [5], on the other hand, indicated that the tablet PC's electronic inking feature may enable the students to effectively use the tool in their note-taking task during class. They also noted that while it may potentially enrich learning, digital tools like the tablet PC, when not effectively integrated, may pose a constant danger to students to veer away from the academic focus.

However contrary their observations are on note-taking behaviors, research seemed to agree in their findings that note-taking behavior supports and improves learning. In the study of [9], college students who took notes were found to perform better at critical thinking exercises and application skills as compared to students who listened without taking notes. Consistently, in one local study by [8], note-taking and review of

notes were positively correlated with test scores. They found out that high test scores were associated with more notes (quantity). Similarly, [6] findings indicated that students who reviewed a detailed set of lecture notes (from the instructor) generally achieved more on examinations than did learners who reviewed their incomplete notes and those who did not write notes at all.

However, in the study by [3], students who took organized notes (quality) on paper performed well on summative tests and those who did computer-assisted note-taking were found to receive high scores on exit tests. When both groups were given time to review, performance of those who did transcribe notes (quality) on computer performed well in summative test of recall. In this study, using computer as a note-taking tool was found to ‘help level the playing field for students of diverse cognitive abilities’ [3].

Regarding the use of note-taking tools, [7] had a contrasting finding from above results. They found out, given no distractions, participants who took notes on paper performed best in word recall than those who took notes on computer and those who did not take notes at all. They also discovered that, given auditory-visual distractions, participants who did no note-taking performed best in word recall than the other two (2) groups. However, in the study by [2], not one note-taking technique or tool may be considered universally suitable given that individual students had different learning styles.

This paper attempted to examine the effects of three (3) note-taking options: using paper and pen, using the tablet PC and no note-taking at all to the quality and quantity of notes taken. Secondly, the test performances of the students from the three note-taking options were compared for differences. Lastly, the paper determined the relationship between the quality and quantity of notes and test performances in exit test and summative test. See Figure 1 for the conceptual framework.

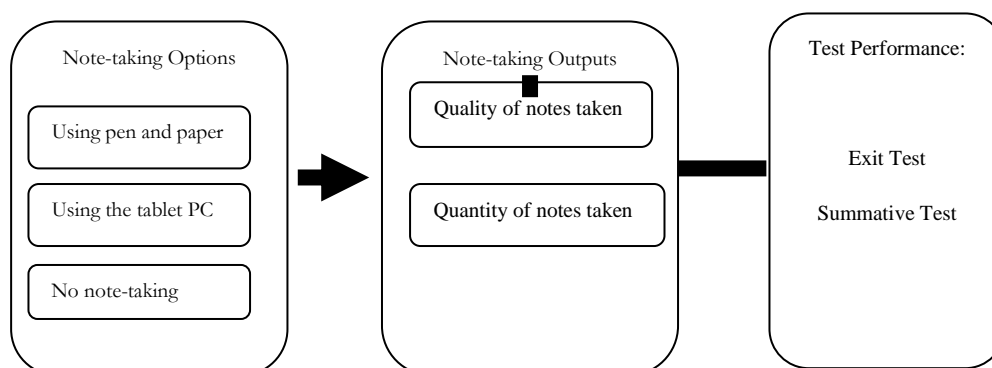


Fig. 1 Conceptual Framework

IV. METHODOLOGY

A. Research Design

The Comparison Group Posttest Only Design was used in the study. Two groups of participants comprised the study group who were given the option to use the tablet PC for note-taking and the comparison group who were not given this option but offered the paper and pen for note-taking. This design is appropriate since students were already blocked into sections for the school year. Also, they would not be notified ahead that they were undergoing the experiment to avoid distractions in the academic setting.

B. Participants

In this design, two Grade 9 English classes of 34 students per class were the primary participants in the study. These 2 sections totaling 68 students came from a batch of 15 sections with 502 students. The two sections underwent an observation as they proceeded to perform note-taking during the same lesson. To maintain a level of academic freedom, the study group was assigned to choose between the tablet PC or none at all for note-taking while the comparison group was given the options to use paper and pen or none at all. Focus group discussions (FDG) with faculty and students provided corroborative data to determine the implications and recommendations of the study.

C. Instruments and Measures

1) *Student note*: Notes from tablet PC and from paper and pen were collected and evaluated in terms of quality and quantity. For quality, the notes categorized into: 1) *raw data* comprising of unconnected words and phrases, 2) *processed information* containing complete sentences or ideas, or 3) *organized knowledge* composed of tables, graphics and lines connecting ideas, words, phrases or sentences. For quantity, items contained in the notes were counted and compared to the total amount of information in the teachers’ notes for a total of 16 points. Categories for quantity of notes were the following: *More than 75%* of notes obtained 13 to 16 points, *Up to 75%* for notes counted within 9 to 12 points, *Up to 50%* for notes within 5 to 8 points, and *Up to 25%* for notes within the range 0 to 4 points.

2) *Exit test and Summative test*: Tests were administered 2 times: the first is the exit test comprising of 25-item multiple choice questions which was administered immediately after the lesson. The other test called the summative test comprising of 35 items was administered 2 weeks after the conduct of the lesson. Both tests measured the cognitive skills of recall and analysis among the students.

3) *Focus group discussions (FGD)*:

D. Procedure and Treatment of Data

1) *Experimentation*: The two sections of Grade 9 students were randomly assigned to be the study group and the comparison group. The two groups took the same lesson in English subject under their assigned teachers. The study group was allowed to use the tablet PC for note-taking or none at all. The comparison group was contained to use the traditional paper and pen or none at all. Both groups took the same posttest immediately after the lesson. Later, they were assigned to review the notes they made and took another posttest two weeks after the meeting. The experiment was expected to create three groups: the no notes group, the tablet PC note-taking group and the Paper and Pen note-taking group.

2) *Post Experiment*: Data gathered were encoded in SPSS v.17 for statistical analyses. First, the note-taking outputs were tested for significant difference with the two note-taking options using the t-test for independent groups (for quantity measure) and Chi-square (for quality measure). Second, the mean scores in the tests, the exit test and the summative test respectively, of the three note-taking options were compared using Analysis of Variance (ANOVA). Multivariate analysis (MANOVA) could not be attempted because of the small sample size. Third, point bi-serial correlation (for quality of notes) and the Pearson’s Correlation Coefficient (for quantity of notes) were used to determine the significant relationship between the note-taking outputs and exit test performance. Fourth, point bi-serial correlation (for quality of notes) and the Pearson’s Correlation Coefficient (for quantity of notes) were used to determine the significant relationship between the note-taking outputs and summative test performance.

At the end of the research, the students were notified that they had been subjected to the note-taking experiment and that the results would be presented to them.

V. RESULTS AND DISCUSSION

TABLE I

FREQUENCY DISTRIBUTION OF STUDENTS' NOTE-TAKING

Note Taking Options	Number of Students
Did not take notes	16
Took notes on the tablet PC	20
Took notes on paper	32

n=68 students

Out of 68 students, around 52 students opted to take down notes during class discussion. Thirty-two (32) students opted to take notes on paper, 20 students opted to take notes with the tablet PC and 16 students opted not to take notes at all during class discussions.

The focus group discussions also consistently revealed that majority of the students observed still preferred to use the traditional paper and pen for taking down notes in the classroom even when the tablet PC was available for use. The students using the traditional paper and pen for note-taking were able to write their thoughts freely, paraphrase the teacher’s important statements and summarize proceedings without delay. Apparently, this mode provided more room for the students’ note-taking styles such as drawing, making charts to connect ideas, highlighting important ideas, among others, which they find more effective in enabling their understanding of the lesson than writing merely words on their notebooks.

On the other hand, the students who did note-taking with the tablet PC were able to use online applications like Papyrus and Evernote. Others did take pictures of their teacher’s board work. The latter was identified as advantageous when one needs to save time especially when there is a lot of subject matter to cover; however, the respondents also clarified that they took pictures of board work only when the teacher allowed them to. Additionally, one respondent did a one-time audio-recording on the tablet PC of a teacher’s lecture which made the review for the test easier. Yet, they asserted that while using the tablet PC for note-taking purposes is convenient for organizing their notes easily and neatly with the right online applications, it is also a source of distraction to them. Consistent with [5], the students reported that, with the tablet PC on hand and availability of the Wi-Fi, there was the tendency to divert their attention to open messaging online applications and surf the web most especially when they have lost focus on the lesson at hand. Also, the option to take notes on paper and pen tends to be the more convenient and familiar mode of note-taking to the students.

TABLE II
FREQUENCY DISTRIBUTION OF STUDENTS' QUANTITY OF NOTES
TAKEN FROM THE TWO (20 NOTE-TAKING OPTIONS)

Quantity of Notes (Total=16 points)	Number of students from Tablet PC option	Number of students from paper and Pen option
16 points (100%)	0	0
12-15 points (75% or more)	3	10
8-11 points (50% or more)	12	21
4-7 points (25% or more)	3	0
0-3 points (less than 25%)	2	1
Total	20	32

n=52 note-taking students

Table 2 shows that majority of the students from both the tablet PC option and the paper and pen option were able to take down fifty percent or more of the total number of notes from the class discussion. This means that the tablet PC option and the paper and pen option offered no advantage at all against each other in terms of covering higher quantity of notes from the class discussion. This seems to concur with [2] that that there is not one note-taking technique universally suitable.

TABLE III
FREQUENCY DISTRIBUTION OF STUDENTS' QUALITY OF NOTES TAKEN FROM THE TWO (2) NOTE-TAKING OPTIONS

Quality of Notes	Number of students from Tablet PC option	Number of students from Paper and Pen option
Raw data	0	4
Processed Information	20	26
Organized knowledge	0	2
Total	20	32

n=52 note-taking students

Table 2 shows that in the tablet PC option, all of the students were able to take processed information which reflect complete ideas or sentences. However, no one in the tablet PC option was able to create organized knowledge. This means that the students typed-in sentences or complete ideas with their tablet PC, but they did not create tables, or insert drawings and graphics and lines to connect the notes taken. In addition, students revealed in the focus group discussions that they found it hard to do paraphrasing and summarizing class discussions on the tablet PC, relegating them to perform copying of teachers' PowerPoint slides or board work. Furthermore, their lack of skill in typing on a tablet PC and mastery of specific note-taking online applications, along with the difficulty in operating a 7-inch tablet PC model makes note-taking with the tablet PC a very wearisome task.

In the paper and pen option, 26 or majority of the students were also able to write down complete sentences or ideas called processed information. However, around four of them wrote down raw data or unconnected words and phrases and two of them were able to create organized knowledge type of notes. This means that in the paper and pen option, a number of students were able to demonstrate beyond writing sentences and words by freely creating tables, drawings and lines to connect these sentences and ideas.

This differing observation of the note-taking behaviors of students in terms of the quality of notes reveals that the majority of the students were less familiar with creating organized knowledge as well as the use of the tablet PC for this purpose. They were skilled in using the paper and pen tool for this activity having done so from the time they started attending formal school.

TABLE IV
MEAN SCORES OF STUDENTS' PERFORMANCE IN THE EXIT TEST

Note-taking Options	Mean Score*	Standard Deviation	Verbal Interpretation
No Notes	17.07	5.39	Performance is up to 68% of the total score
Tablet PC Option	19.92	4.52	Performance is up to 80% of the total score
Paper and Pen Option	20.40	4.26	Performance is slightly more than 80% of the total score

*Perfect score is 25 points.

Table 4 shows that the students who opted not to take down notes scored only up to 68 percent of the total number of items, and the students who took notes on either tablet PC or paper and pen performed correctly in 80 percent or more of the items in the exit test, with the paper and pen group scoring slightly higher than the

tablet PC group. This seems to show concurrence with [8] and [6] that the students who codified the lesson in notes achieved more than those who did not. However, the high standard deviation in scores seems to reveal that there are other factors affecting the students’ test performance outside of the presence or absence of notes and note-taking tools. Physical and psycho-emotional conditions of the students, the surrounding environment and different learning preferences were identified during the focus group discussion as contributing factors, concurring with [2].

TABLE V
MEAN SCORES OF STUDENTS’ PERFORMANCE IN THE SUMMATIVE TEST

Note-taking Options	Mean Score*	Standard Deviation	Verbal Interpretation
No Notes	21.43	5.99	Performance is more than 75% of the total score
Tablet PC Option	24.05	4.21	Performance is more than 75% of the total score
Paper and Pen Option	23.31	5.99	Performance is more than 75% of the total score

*Perfect score is 25 points.

Table 5 shows that the students who opted not to take down notes performed slightly as well as the students who took notes on either tablet PC or paper and pen, scoring correctly in more than seventy-five percent of the items in the summative test. This means that given ample time for review, students from different note-taking options will have the same chances of performing well in the summative test. This concurs with [3] finding that the review time given to all may level-off the ground for students with different cognitive abilities.

TABLE VI
T-TEST RESULTS ON THE QUANTITY OF NOTES BETWEEN THE STUDENTS’ NOTE-TAKING WITH THE TABLET PC AND THOSE WITH PAPER AND PEN

	Tablet PC note-taking students	Paper and pen note-taking students
Mean Score	8.6 (out of 16 points)	9.97 (out of 16 points)
SD	2.98	1.94
Levene's Test for Equality of Variances (assumed)	3.307	
t	-2.009	
Sig. (2-tailed)	.05	
Verbal Interpretation	Significant difference exists.	

Table 6 shows the results of the Independent Samples *t*-test. The test was found to be statistically significant, $t(50)=-2.009, p=.05; d= -1.37$. These results indicate that the students taking notes with paper and pen ($M=9.97, SD=1.94$) took more notes than the students using the tablet PC for note-taking ($M=8.6, SD=2.98$). Consistent with Lin and Beginho (2011), the study reveals that the students using paper and pen performed better in the task of taking more notes than the students using the tablet PC. However, it was also observed that students’ note-taking strategy with the tablet PC was typing letters via the soft keyboard. They did not use an inking app. As [5] mentioned, crucial in making the tablet PC a better note-taking tool is the use of electronic inking. This observation suggests the need for training on the use of the electronic inking feature of the tablet PC for note-taking.

Table VII

Chi-square Test on the Quality of Notes between the students' note-taking with the tablet PC and those with paper and pen

Quality of Notes	Number of students from Tablet PC option	% within the tablet PC option	Number of students from Paper and Pen option	% within the paper and pen option
Raw data	0	0%	4	13%
Processed Information	20	100%	26	81%
Organized knowledge	0	0%	2	6%
Total	20	100%	32	100%
Chi-square (X^2)	4.239			
df	2			
Sig. (2-sided)	.120			
Verbal Interpretation	No significant difference exists.			

Table 7 shows the results of the Chi-square test. The test was not found to be statistically significant, $X^2(2, N=52)= 4.239, p>.05$. Accepting null hypothesis 1.2 ($1.2H_0$), these results reveal that the note-taking options do not affect the quality of notes taken by the students. Contrary to [7] finding, there is no one device better than others to use when taking down high-quality lesson notes. Consistent with [8] study, the provision of note-taking devices may not guarantee high quality notes. Other elements may be probably necessary to create a better note-taking environment than just the availability of note-taking devices like the provision of topic outline and connecting to prior learning. It may be noted, however, that the students found much freedom with paper and pen because they were able to encode notes faster and easily create tables, drawings and other graphics.

TABLE VIII

ANALYSIS OF VARIANCE IN THE EXIT TEST PERFORMANCES OF STUDENTS FROM THE THREE NOTE-TAKING OPTIONS

Source of Variation	Sum of Squares	df	Mean of Squares	F	Sig.	Verbal Interpretation
Exit test						
Between Groups	112.280	2	56.14	2.666	.078	No significant difference exists
Within Groups	1331.785	63	21.139			
Total	1444.064	65				

Table 8 shows the Analysis of Variance (ANOVA) test aimed at comparing the performances of students in the exit test. The test was not found to be statistically significant, $F(2,63)=2.666, p=.078$. This means that there is no significant difference in the exit test performances among the students when grouped according to their note-taking options. This implies that whether or not students take notes or whether they take notes with the tablet PC or on paper and pen, their performances in exit tests are not dependent on it. The study contradicts [3] who claimed that digitally assisted note taking students performed better in this test type. Furthermore, as students also reported, other factors may probably influence their scores in exit tests like self-discipline in the classroom, class attendance and participation and availability of teachers' notes/handouts. Further studies therefore need to be pursued to clarify this issue.

TABLE IX
ANALYSIS OF VARIANCE IN THE SUMMATIVE TEST PERFORMANCES OF STUDENTS FROM THE THREE NOTE-TAKING OPTIONS

Source of Variation	Sum of Squares	df	Mean of Squares	F	Sig.	Verbal Interpretation
Summative test						
Between Groups	63.708	2	31.854	1.041	.359	No significant difference exists
Within Groups	1989.763	65	30.612			
Total	2053.471	67				

Furthermore, Table 9 shows the ANOVA test results comparing the performances of students in the summative test. The test was not found to be statistically significant, $F(2,65)=1.041$, $p=.359$. There is no significant difference in the summative test performances among the students when grouped according to their note-taking options. This implies that whether or not students take notes or whether they take notes on tablet PC or notebook, their performances in summative tests were not dependent on it. Other factors may significantly influence their scores in summative tests like time management, class attendance and participation, access to teachers' notes/handouts, availability of photocopied notes from classmates, and availability of textbook. Further studies may be needed to check this result.

TABLE X
CORRELATION BETWEEN QUALITY AND QUANTITY OF NOTES AND PERFORMANCES ON EXIT TESTS

	Exit Tests	Verbal Interpretation
Quality of Notes		No Significant relationship exists.
Pearson's correlation	0.145	
Significance Level (2-tailed)	0.301	
N	68	
Quantity of Notes		No Significant relationship exists.
Pearson's correlation	0.090	
Significance Level (2-tailed)	0.519	
N	68	

Table 10 shows the Pearson's correlation coefficient test results aimed at determining the significant relationship between the quality and quantity of notes encoded and the students' performance in the exit test. The test was not found to be statistically significant for the quality of notes, $r(66)=0.145$, $p=.301$, and the quantity of notes, $r(66)=0.090$, $p=.519$, each when correlated with the exit test scores of the students. Contrary to the findings of [8] and [6], the study revealed that the quality and quantity of notes taken by the students were not significantly related to their performances in the test immediately following it. This implies that whether or not they wrote down unconnected words or took note in complete sentences (quality) or whether or not individual students had more notes than the others (quantity), it did not significantly contribute to their performances in the exit test.

TABLE XI
CORRELATION BETWEEN QUALITY AND QUANTITY OF NOTES AND PERFORMANCES ON SUMMATIVE TEST

	Summative Tests	Verbal Interpretation
Quality of Notes		
Pearson's correlation	0.209	No Significant relationship exists.
Significance Level (2-tailed)	0.087	
N	68	
Quantity of Notes		
Pearson's correlation	0.180	No Significant relationship exists.
Significance Level (2-tailed)	0.141	
N	68	

Furthermore, using the Pearson's correlation coefficient test in Table 11 shows that the quality of notes had the computed $r=0.209$, $p>.05$ and the quantity of notes had the computed $r=0.180$, $p>.05$ when correlated with the summative test scores of the students. Accepting null hypothesis 4 ($4H_0$), this means that the quality and quantity of notes taken by the students were not significantly related to their performances in the summative test following it. This finding is contrary to the claims of [3]. From the study, it may be implied that whether or not individual students had taken more notes than the others (quantity), or whether or not they transcribed lectures or did semantic note-taking (quality), it did not significantly contribute to their performances in the summative test. Furthermore, what seemed to level the 'playing field' [3] for students from different note-taking options was not the note-taking tool but apparently the review spent in preparation for the test.

VI. CONCLUSION AND RECOMMENDATIONS

The tablet PC has been shown to offer the convenience of having fewer loads of school materials to carry. With the right online applications, one's spelling is always correct and outputs are organized and neat. Moreover, surfing the net on the tablet PC during a class discussion supplements a current lesson, while audiotaping a lecture helps save time when the learners have a lot of subject matter to take note of and recall valuable information. On the other hand, the disadvantages cited by the learners seem to pose valid concerns in using the tablet PC for note-taking purposes inside the classroom. For one, the study gathered that using the tablet PC for note-taking seemed to be a challenge against focusing on the lesson as it poses a distraction considering the number of things the learners may easily attend to instead of note-taking with the tablet PC, hence resulting in loss of concentration in the lesson. This does not discount, however, the usefulness of the tablet PC for learning. Given the appropriate mobile online applications and tools as well as proper training in the classroom, validation may be done around the finding from the study of [7] that students may be able to efficiently and effectively take down notes in the midst of a distractive environment with the use of digital tools such as the tablet PC.

The findings revealed that the learners' note-taking behaviors have an impact on the quantity and quality of notes they take. The students' mastery of the use of the traditional paper and pen in note-taking is believed to have helped them take more notes than those using the tablet PC as the former could enable them to freely express their understanding of the lesson in the manner that best suits their purpose. Even when presented with the option to take notes using the tablet PC, their objection to using the e-learning tool stems from some problems in handling the gadget such as the difficulty in typing directly on the soft keyboard and the distraction of opening messaging online applications and surfing the net during a class discussion, among others. This apparent resistance seems to stem from the fact that teachers continue to observe traditional teaching practices. In as much as students may want to explore the use of mobile online applications like the camera and the recording tool to ease their note-taking duties and allow them to focus on understanding learning content, teachers continue to prohibit their use inside the classroom. Students found themselves limited to the use of the

text-encoding online application for note-taking. Of course, no amount of tablet PC-based encoding of texts can compete successfully with the ease of note-taking on paper using the pen.

Hence, in order to maximize the e-learning tool for digital note-taking purposes, the study suggests the need for training the students with regard the proper use of the electronic inking, imaging and recording features of the tablet PC for taking notes other than typing on the soft keyboard. Furthermore, so that the e-learning tool becomes a truly collaborative instrument between the teachers and the students, the teachers may be enjoined to familiarize and continuously update themselves with the productive features of the tablet PC and proper management of its use for learning. Teachers may also be encouraged to allow students to explore and make use of preferred mobile online applications and tools for note-taking.

An interesting case in point is that whether the students took notes the traditional way or on the tablet PC, or did not take notes at all, the test results showed no significant differences in their test performance. Unlike the findings in previous studies, the students' notes did not seem to have helped the learners perform better in their tests than those who did not take notes nor could a correlation between the use of note-taking devices and their test scores be established as of yet. It may be surmised though that scheduling the test to a later date may have probably helped the students with various intelligence abilities prepare themselves to score as well as others in the said test. Hence, further investigation must be conducted on the relationship between the students' notes and their test-taking skills as well as other significant factors that may affect their performance in tests.

Lastly, the 'no significant difference/relationship phenomenon' that resulted in the study does not mean that the tablet PC has not been effective in delivering its intended objective which is to enhance student learning. One thing the study realized is that enhancing learning with the tablet PC does not all the time translate to better test performance. It is proposed that educators and students rethink their paradigm for learning with the tablet PC, or with technology in general, to veer away from the traditional focus on 'learning to the test' and shift into the new paradigm of 'learning for understanding'. This shift will more likely fit into the proper tablet PC integration in the classroom, particularly directing the quality and quantity of note-taking by the students. It is in this light that succeeding studies can reveal more concrete measures in note-taking to improve the students' performance in the academics.

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