PAPERLESS CHECKING OF RESEARCH PAPER (PCRP): ADDRESSING STUDENTS' DIFFICULTY IN MAKING A RESEARCH OUTPUT

A Classroom-Based Action Research

I.   Abstract

The purpose of this action research was to address senior high school students' difficulty in making a research output by applying the strategy on Paperless Checking of Research Paper (PCRP). A classroom-based action research design was used in this study. Ten group leaders from the two sections of Grade 12 of Mintal Comprehensive High School – Senior High School, Mintal, Tugbok, Davao City were the main participants and recipients of this study who were chosen through purposive sampling technique. An in-depth interview and a focus group discussion were used to gather the data. Responses were transcribed and analyzed to generate essential themes. Using thematic analysis, results revealed that PCRP helps students through experiencing convenience and accessibility, efficiency and resourcefulness, comprehensive and clear reviews, and friendly and motivating strategy. The strategy showed benefits to students by making them practice time consciousness, apply ICT skills, value technology in research, appreciate research, and enhance reading, writing, and editing skills. Shared insights were highlighted namely: the need for time, effort, and resources; accuracy, organization, and system of research; mastery of ICT skills; easy internet access; and sharing of best classroom strategies. Research teachers are encouraged to adopt the PCRP strategy in their research class.

*Keywords: basic education, paperless checking, public schools, action research,
        Davao City*

II.   Context and Rationale

Research is already embedded in the senior high school curriculum. As a result, senior high school students are required to make their research output as expected from the required competencies in practical research subjects. It is common knowledge to all of us that research needs more resources and more time to engage into editing, revising, and checking of their output. Besides, doing research incurs expenses which are burdens on the students as well as to their parents. Common expenses are internet fees, printing and binding. On the part of the teachers, receiving volume of manuscripts submitted by the students for checking would be very hassle and require enough space for safe keeping and compilation. In my case, I only have very limited space in the faculty room with no enough cabinets to safeguard all my pertinent documents, students' portfolios, research manuscripts, reference books, learners' modules and materials, and other instructional materials. Thus, I need to make some initiative or strategy so that I can also maximize the use of my space through limiting the bulk of papers I used to receive from my students.

I have been teaching research subjects for three years already. Students regarded research as the most difficult subject because it requires full paper as the final output. They considered research paper as burden since it demands a lot of time, effort, and resources. Students would usually ask me for a favor that they can submit their manuscript via email because they find it hard to print outside and the charge is very expensive. Consequently, students showed poor submission, low compliance, and low quality of research output. For this reason, the researcher is challenged to address such problem through conducting this action research.

Literature Review

The following related readings provide relevant information and literature that support this action research.

In the study of Craven (2017), it has been emphasized that new technology is constantly making its way into the classroom in an attempt to improve the learning experience and many universities and schools are using computers and mobile devices in the classroom to enhance students' academic performance. This use of technology can create a paperless classroom. Colleges, universities and schools have different approaches when putting in place the paperless classroom.

Moreover, the benefits of the paperless classroom are varied and apply to both teachers and students. The first advantage is simply not having any physical paper that can be lost or forgotten and that may perish over time. Another benefit for the teacher is not having to make photocopies of each hand-out – a tedious task, especially when the copier breaks down. Rather than photocopying, a document can be uploaded to Blackboard and the students can access the document using their iPads. Students do not need to develop a filing system, and even disorganized students can find their lecture notes organized for them on Blackboard by the teacher, week by week. The use of a scanned textbook eliminates the problem of students forgetting their work, and there is no longer any need for them to carry heavy textbooks to class, so no excuses (Craven, 2017).

In the same breath, in a school which adopted a "paperless classroom" policy, the students' reading and writing preferences depended on the context in which the reading or writing was performed. The boys preferred to read and write on the computer significantly more than girls. Conversely, the girls' handwriting skills and preference for handwriting were higher than the boys'. Reading and writing on computer was found to be favored among strong students, while weak students tended to prefer using

paper. This research also revealed a rapid decrease in favoring computer over paper in both reading and writing over time. Students who had experienced the paperless classroom policy in this school for three years were less supportive of the use of computers for reading and writing than younger students (Meishar-Tal & Shonfeld, 2019).

Furthermore, there were several studies conducted which prove that paperless classroom approach has great impact on students achievement. One of which was Zucker and Hug (2008) who demonstrated that teachers needed to develop a new skill set that combined not only content knowledge and effective pedagogy for the content, but also the skills to effectively use technologies in the right way to maximize their potential. They called this new skill set technological pedagogical content knowledge or TPCK. Through the use of TPCK, teachers can more effectively use the technology tools available to them to maximize the learning potential of their students. Survey results from this study suggested that the majority of students, teachers, and administrators all believed the use of 1:1 computers had a positive impact on student achievement.

In the study of Granito and Chernobilsky (2012), students are motivated to engage with their schoolwork because the technology has an impact on their motivation to learn and retain new information. Because today's students have grown up in a digital landscape, they are increasingly inspired and motivated by technology.

Conversely, Davis (2002) discovered that the implementation of a 60/40 model in his classrooms, where 60% of the course work is done in class with technology tools and 40% is completed outside of class time with web-based discussion boards, live chat, and emails increased the students' efficiency in turning in work on time. This allowed for more immediate feedback on the instructor's part, which in turn had a direct impact on the students' achievement levels in the course.

The traditional system of printing all our classroom learning materials is both chaotic and inefficient. Today, the concept of a paperless classroom is more than just a trend. Schools across the country are now opting for apps and other software as a replacement for traditional pen and paper. And as technology improves, so do the benefits for teachers, schools and, most importantly, students. The most compelling reasons to go paperless are: teachers can save time; schools save money—and the environment; and students are more engaged. Thus, improved engagement is one indicator that the most significant impact of a paperless classroom is on the students inside it (Samson, 2018).

III.   **Action Research Questions**

1. How does Paperless Checking of Research Paper (PCRP) help students address their difficulty in making a research output?

2. What are the students' benefits from paperless checking of research paper strategy?

3. What are the insights shared by the students about paperless checking of research paper?

Scope and Limitation

This action research is delimited only to the ten chosen group leaders of Grade 12 Edison and Maxwell students of Mintal Comprehensive High School – Senior High School located at Mintal, Tugbok District, Davao City. Also, another five group leaders were invited for a focus group discussion to validate the generated themes. One of the weaknesses of this study, however, was that it utilized the qualitative method where results could not make a generalization. Despite safeguards as to the trustworthiness and credibility of the statements of the participants, the small number contributed to the probability that their statements may not be truly the representative of the total population of the students in the entire senior high school. Hence, the research rigor is slight only.

IV.   **Innovation, Intervention, and Strategy**

I have tried different interventions to help students in making quality output in research since most of the students are having difficulties in the submission of their research output. I came up with one strategy which I find good and helpful in checking the research output of Grade 12 students. I called this intervention as "Paperless Checking of Research Paper" (PCRP) because checking and editing will be done through computer. Its primary aim is to help address students' problem in late submission of research output, incurring big expenses for ink, printing, and other supplies, and lessen bulky papers submitted to teachers. In this way, it may improve the quality of research papers made by the senior high school students.

The research teacher instructed the clear mechanics and guidelines of implementing PCRP. Since research paper was assigned by group, a leader or focal person was identified to be responsible of keeping the files and for sending them via electronic mail. Each group collaboratively made the research manuscript following the set standards. The document must be in word file so that it can be easily checked subject

for editing. The first draft served as the first version which was sent through the e-mail address of the research teacher. For instance, a draft had a file name G12Maxwell_Group1_ V1, then V2 for version 2, and so on. Then, the teacher received the manuscript which was checked per page. During the checking, the teacher indicated comments and suggestions directly on the document submitted by simply highlighting the words or phrases with errors or need to be improved and adding a new comment on the right side of the document. Checking was conducted within 1 to 3 days and it was resent via e-mail to the corresponding research groups. Students were given 3 to 5 days to comply all the indicated comments and suggestions. This process was just repeated until lesser mistakes in the final manuscript are obtained.

The timeline for this started on November 2019 until February 2020, approximately three months. The teacher carefully observed the manner of students in the submission of their paper and how they follow the timeline and edit the paper based on the given corrections. To document the entire process and impact of PCRP, an in-depth interview was conducted to the selected student. In this way, students were able to feedback on their experience about the PCRP strategy. By March 2020, the data collected was analyzed to generate the themes and a final output was produced.

VI. **Action Research Methods**

This paper used an action research design with a qualitative approach where data are gathered through in-depth interview of the identified student-participants. According to Parsons and Brown (2002) that action research is a form of investigation designed for use by teachers to attempt to solve problems and improve professional practices in their own classrooms. It involves systematic observations and data collection which be used by practitioner-researcher in reflection, decision-making and the development of more effective classroom strategies.

a. Participants and Other Sources of Data and Information

The participants of this study were chosen through a purposive sampling technique because it is appropriate for this action research. A total of ten students, five group leaders from each section, Grade 12 Edison and Maxwell, were the main participants of this study. Then, another five group leaders were invited for a focus group discussion to further validate the results. Students were bona fide students for the School Year 2019 -2020.

Additionally, the primary sources of data were taken from the responses of the participants based on the conducted in-depth interview. A teacher-made interview guide

was used in gathering the necessary data. The researcher employed semi-structured face-to-face interview to ten student-participants who were group leaders and responsible for editing their research output.

b. Data Gathering Methods and Ethical Considerations

After a three-month implementation of the PCRP strategy, I started to identify the group leaders of the two Grade 12 sections to be interviewed to give me feedback. I chose ten group leaders who were very responsible and so engaged in the making of their research paper. I also made an interview guide to gather the necessary data. To ensure a simple validity of my tool, I let my colleagues who are English teachers to check the comprehensiveness of my interview guide. Then, I approached my students that I have plans of doing an interview with them. I asked them to provide a written parental consent allowing them to participate in this study. During my vacant periods, I called my participants one by one for an interview. An average of two participants was interviewed in a day preferably one in the morning and one in the afternoon. After the ten main participants were interviewed, the responses were transcribed and analyzed. Then, essential themes were generated. A focus group discussion was conducted to another five group leaders coming from the said two sections to further validate the results.

Moreover, I highly ensured research ethics in conducting this action research. Research ethics are focused on what is ethically right and wrong when engaged with participants (McMillan & Schumacher, 2010). They are developed to provide guidelines for practice so that participants are protected from harm. Among these principles are informed consent; privacy and confidentiality. Hence, I highly considered trustworthiness and confidentiality of data. Anonymity of the participants was strictly observed. Results shall only be used only for classroom intervention purposes. Permission from the school principal was secured. Parental consent allowing the participants to be part of this action research was also asked.

c. Data Analysis Plan

The interviews conducted with the participants were transcribed, translated, analyzed and underwent thematic analysis. Similar answers were grouped to arrive with essential themes supported by substantial statements. Focus Group Discussion (FGD) was initiated to ensure validity of the results. However, its rigor is not so intensive because this is just a classroom-based action research.

VII. **Results and Discussion**

The Helpfulness of Paperless Checking of Research Paper

The senior high school students who are engaged into making research paper shared their experiences on the helpfulness of paperless checking which help them ease their burden in submitting a full research paper requirement as shown in Table 1. The participants expressed four essential themes namely: *convenience and accessibility, efficiency and resourcefulness, comprehensive and clear reviews, and friendly and motivating strategy.*

Convenience and Accessibility. Most of the participants commonly revealed that paperless checking of research is so convenient and accessible because it is done through a soft copy in office applications and electronic mail. Submission of research paper is made easier, hassle-free, and easy to access anytime or anywhere. Besides, it provides clearer comments, more detailed corrections, and very specific errors are identified. Unlike in checking the hard copy, the teacher's comments are not that clear and can be misinterpreted by the students.

Efficiency and Resourcefulness. Another advantage of PCRP is that students become efficient and resourceful in making their research output. Through this strategy, students save time and money since they can edit at home and they need not to print hard copies. One of the challenges to undertake in making research is printing and binding expenses not only in the final copy but also in the draft copies subject for checking and reviews. Thus, paperless checking is the answer to mitigate high expenses for printing of research output.

Comprehensive and Clear Reviews. This emerged as the third major theme. Through giving comments via electronic checking, students appreciate the importance of the given reviews because of its clarity of instruction, clear identified errors, and detail in every paragraph of every page. Likewise, each manuscript is evidently read because of the highlighted errors with corresponding suggestions.

Friendly and Motivating Strategy. Most importantly, paperless checking is considered friendly and constructive approach of editing research because some simple or minors errors like misspelled words can be corrected easily by the teacher. Notes and suggestions are clearly enumerated with annotations. Also, paperless checking motivates students to check their email on a regular basis in order to be updated and be able to submit the paper promptly as possible.

Table 1: The Helpfulness of Paperless Checking of Research Paper

Essential Themes	Thematic Statements
Convenience and Accessibility	• It made me easier to submit our research output. • It is hassle-free. • It is a very convenient approach because we can access our paper anywhere and anytime. • It is easy to understand the indicated comments. • I can easily see the errors to be corrected.
Efficiency and Resourcefulness	• It is time-saving since editing can be done at home. • It is less expensive because we need not to print the manuscript. • We were able to save money from printing hard copies. • We were able to use our time efficiently because after integrating the corrections, we can send it via email. • It made me more resourceful in getting information needed in making my research paper.
Comprehensive and Clear Reviews	• Comments and suggestions were stated in detail. • Identified errors were clearly highlighted and specified. • Things to improve are enumerated properly. • Comments were indicated in each paragraph of every page. • Each paragraph is evidently read because of the highlighted error and given comments.
Friendly and Motivating Strategy	• Comments were clear, specific, and friendly. • Simple and minor errors like misspelled words can be corrected by the teacher easily. • Notes and suggestions are clearly enumerated with additional explanations. • Paperless checking motivates the students to check the email on regular basis.

Students' Benefits from Paperless Checking of Research Paper

Implementing PCRP made various beneficial impacts to student-researchers in the senior high school as presented in Table 2. The following essential themes were generated: *time consciousness, application of ICT skills, relevance of technology in research, appreciation of research, and enhancement of reading, writing, and editing skills.*

Table 2: Students' Benefits of Paperless Checking of Research Paper

Essential Themes	Thematic Statements
Time Consciousness	- It encourages me to manage our time well. - It made me follow submission deadlines. - Paperless checking helped us follow the set timeline. - It also helped us being updated. - We were challenged to be responsible enough in editing our paper.
Application of ICT Skills	- I was able to apply our lessons in computer class. - Our computer knowledge is also enriched. - We were taught how to indicate page numbers, tables and all technicalities of writing a research paper. - We applied ICT skills in editing our manuscript in soft copy.
Relevance of Technology in Research	- It made me realize the usefulness of computer in making research. - Making research is made easier because of computer and internet access. - Online sources of data gave more readings and related literature of the study. - Doing research really needs technology like computer, printer, and even internet connection.
Appreciation of Writing Research	- I am able to value the importance of making research and its significance. - I realized that research making entails patience and endurance. - Research is important in the senior high school. - At first, I do not like making research but because paperless checking approach, I learned to appreciate writing research paper. - Research subject is important though it is hard to make.
Enhancement of Reading, Writing, and Editing Skills	- I am able to correct my errors in spelling and grammar. - Comments and suggestions made me read more research articles. - I became more conscious on what to write in the manuscript to avoid mistakes. - I learned proofreading my research paper. - My writing style has also improved even in a little way. - I have learned basic editing of my paper in terms of margins, spacing, paging, and formatting.

Time Consciousness. Through PCRP, students were encouraged to manage their time well especially on the prompt submission of research output. Most of the participants emphasized that they become more updated and were able to follow the agreed timelines for checking, editing, and finalizing the research paper. Additionally, students became more responsible in doing research through constant checking of their emails, following the corrections given, reading more articles to be integrated in the paper, and being aware of the technicalities and formats of the paper.

Application of ICT Skills. Students showed their computer literacy in making research paper. One participant expressed that their computer basic knowledge is enriched and they were able to experience actual application of the said skills. They were taught of proper formatting of research paper particularly on indicating page numbers, adjusting the margins, using proper spacing, table formatting, and other technical formatting.

Relevance of Technology in Research. PCRP made students realize the usefulness of technology particularly the computers and internet access which helped them unload their burden in making research. Online sources of data were of great help in enriching the review of related literature in the study. Technology and research are two important things which should be considered by the researchers. Students' life in research would not be easy without the aid of technology. Further, integrating the use of computer technology is one of the 21st century skills of the learners that should be enhanced.

Appreciation of Writing Research. Students admitted that they did not expect that making research would be just for the sake of compliance to pass the subject. However, when they were engaged into writing and editing their research papers, they recognized the importance of research not only as a subject but also its significance to real life. Furthermore, students realized that making research entails patience and endurance. Acceptance of one's errors is also important so that it would be easier for them to follow the comments, corrections, and suggestions indicated in their paper.

Enhancement of Reading, Writing, and Editing Skills. Doing research is a challenging performance task but it is very essential and it enhances various macro skills of the students like reading and writing. Students were able to correct their noted errors in spelling, grammar, and sentence construction. Proofreading skills were also enhanced since they became aware of their mistakes and how it should be corrected. PCRP helped students improve their writing styles from simple to more academic or

scholarly research output. Editing a research paper is not an easy task for beginning researchers like the senior high school students.

Shared Insights of Students

The application of PCRP strategy has made students ponder some realizations and insights about their experiences in making research paper. Specifically, presented in Table 3 are the shared insights of students: *the need for time, effort, and resources; accuracy, organization, and system of research; mastery of ICT skills; easy internet access; and sharing of best classroom strategies.*

The Need for Time, Effort, and Resources. Students came to realize that making research is not an easy task and that it should not be taken lightly as a subject which means that more time and effort should be spent to come up with quality research output. Researchers should be more responsible, resourceful and persistent through being more focus to what they are doing and more driven to finish their research work utilizing all the resources needed. As a research adviser, I keep on encouraging the students to always double their effort and be time conscious in doing their research. Although, checking research paper is paperless but still it needs more time and effort to do the editing, otherwise, it cannot be complied.

Accuracy, Organization, and System of Research. One of the things that student-researchers realized was being organized and systematic in following the steps of doing effective research. As agreed, students should follow the prescribed research format of the school by consistently considering all its technicalities. One of the common mistakes in the students' research draft is improper and inappropriate citation which may lead them to plagiarism issue. Thus, citing proper credits to all the mentioned references should be taken into consideration by being accurate in giving full citation of the authors.

Mastery of ICT Skills. Students expressed their appreciation of the necessity to have mastered the basic computer skills due to its usefulness in writing and editing research papers. They recalled the lessons in empowerment technology subject like encoding in office applications and making PowerPoint presentations. However, they revealed that during their class in computer, some basics were not mastered but because of PCRP strategy, they were able apply their knowledge in computers. Students felt comfortable in paperless checking because of its easy access and convenience because they only need to edit directly on the soft copy and need not to print hard copy.

Table 3: Shared Insights of Students

Essential Themes	Thematic Statements
The Need for Time, Effort, and Resources.	• I realized that making research is not an easy task. • Research needs more time and effort. • Resources needed should be considered in doing research. • I should double my effort in making my research. • Researchers should be resourceful and responsible. • Doing research needs more focus and time.
Accuracy, Organization, and System of Research	• The technicalities of making research made me more systematic in doing things. • To do research means being systematic and able to follow the prescribed format. • As a researcher, I need to follow the sequence or flow of the research paper. • The sources of data should be accurately and properly cited to avoid plagiarism
Mastery of ICT Skills	• A senior high school student should have basic computer literacy. • Lessons in empowerment technology are very useful in writing research paper. • My knowledge in encoding using windows office applications helped me in editing my manuscript. • In making research, we need the aid of computer technology. • I feel comfortable about paperless checking because I know how to edit in soft copy.
Easy Internet Access	• It would be better if we can use the computer laboratory in editing our research paper. • School should provide free wifi inside the campus so that we can research even inside the classroom. • Paperless checking needs strong internet connection. • It would be very expensive if the school do not have internet access.
Sharing of Best Classroom Strategies	• Other teachers and schools may also adopt paperless checking style. • The school should sustain the implementation of paperless checking strategy to ease students' burden. • Students should embrace paperless checking because of its convenience and usefulness. • The research teacher may also share this style to other subject teachers not handling research.

Easy Internet Access. Computer is a primary requirement in implementing PCRP strategy. With all positive feedback and impact on the students about PCRP, they

also expressed their sentiments on the availability of computer laboratory and internet access in the school because of its low connection and some computer units are not functioning well. Also, they said that it would be very expensive if the school do not have internet connection or Wi-Fi because they need to go to internet café since most of their classmates do not have internet at home. Furthermore, instead of computer, they also used their gadgets, smart phones, and pocket Wi-Fi just to research and check their emails but editing cannot be thoroughly done due to its limitations. Besides, internet connection in the smart phones is not that stable. As a result, school is encouraged to provide easy access to internet not only in the computer laboratory but also available in the classroom through wide range Wi-Fi. This simply implies that internet access is vital in making quality research paper.

Sharing of Best Classroom Strategies. Based on the positive feedback of PCRP from the student-researchers, this strategy may be effective also to other teachers, students and schools. This is open to all interested teachers in order to help the senior high school students in making their research papers in less expensive manner, accessible and based on their convenience. Likewise, school should sustain the implementation of paperless checking strategy not only to ease students' problem but also to save resources like papers and ink. On the other side, the students should also embrace PCRP in order to develop their 21st century skills on the use of technology. In the same manner, research teachers may also adopt this strategy to produce the desired quality research paper of students.

Reflection

Through this action research, I have realizations and vivid reflections about handling research subjects in the senior high school. I have learned that students possess great potentials of producing quality research output if only their teachers are strategic enough in giving them with a well-stretched patience and guidance all throughout their research journey. Ultimately, research subject needs knowledgeable and quality teacher in order to come up with better expected output. Integrating the use of information, communication and technology is a very timely approach in teaching the 21st century learners. In fact, today's students are more motivated to engage in classroom activities when the teacher uses interactive technology. Most importantly, in teaching research, innovative style is highly encouraged so that students may more appreciate or value the importance of research not only as a subject but also as to its impact to our daily life.

Implication for Practice

Embracing the culture of research in the K to 12 Curriculum especially in the senior high school program is big challenge not only for the teachers but also for the students. However, it is the primary role of the teacher to ensure that students are properly guided on what to do about making the research output by designing appropriate strategy so that it would be more convenient, friendly, and motivating on the part of the students. With this action research, Paperless Checking of Research Paper (PCRP) really serves as an alternative solution of addressing students' poor submission, low compliance, and low quality of research output. This strategy is appreciated by the students as well as it manifested various benefits to them, most especially, it eases their burden in making the final research output. With the good results of this study, I encourage more research teachers to use Paperless Checking of Research Paper (PCRP) in order to help the senior high school students produce quality research output. This would also make research teachers more innovative and make the research class more interactive and more engaging. For those research enthusiasts, this may be conducted into a full-blown research in order to give a deeper understanding of research difficulties experienced by the students.

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