INTERACTIVE STUDENTS' NOTEBOOK (ISN): IMPROVING CONTENT
KNOWLEDGE AND WRITING SKILLS IN RESEARCH
OF GRADE 12 STUDENTS

A School-wide Action Research submitted to the Office
of the Policy Planning and Research Division

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Interactive Students’ Notebook (ISN) is a learner-centered and flexible teaching approach aimed to promote students’ connection to their teachers’ input based on their learning style. This study determined the effectiveness of Interactive Students’ Notebook (ISN) as a method in teaching and improving content knowledge and writing skills of Grade 12 Science, Technology, Engineering and Mathematics (STEM) students. It investigated the significant changes in the content knowledge of learners after being exposed to Interactive Students’ Notebook (ISN) in an action research; and investigated the learners’ and teachers’ perceptions on the use of Interactive Students’ Notebook (ISN) in Research Subjects. One hundred thirty grade twelve learners were given pre-test and post-test to determine their academic performance in terms of content knowledge; the same students were also given writing tests in a form of research proposal writing to determine their research writing skills before and after exposure to Interactive Students’ Notebook (ISN). The study showed that Interactive Students’ Notebook (ISN) is an effective method in improving content knowledge and writing skills in Research. The t-tests revealed the significant difference between the pre-test and post-test mean scores of the learners, showing a significant improvement of the learners’ academic performance in terms of content knowledge. The students rating in the writing tests before and after exposure to Interactive Students’ Notebook (ISN) also revealed a statistically significant improvement in the students writing skills. The study also revealed the learners’ and teachers’ perceptions of Interactive Students’ Notebook (ISN) as an effective, more interesting and more fun, more meaningful approach to learning research both in content knowledge and writing. Furthermore, Interactive Students’ Notebook (ISN) was preferred by the learners and teachers because of the personalized nature of the approach, the fun process and more meaningful knowledge synthesis it provided. Further studies to develop and innovate Interactive Students’ Notebook (ISN) to address present limitations are recommended in the Basic Education Curriculum in the Philippines.

**Keywords:** Interactive Students’ Notebook (ISN), Content Knowledge, Writing Skills, Research, Academic Performance
I. CONTEXT AND RATIONALE

Conducting research is an integral part of being a student. However, research concepts paper writing remains an uninteresting, unexciting activity and the toughest challenge and intimidating task for many university students. It turns a previously thrilled classroom with boredom, passiveness and lack of enthusiasm when research writing starts (Bernardo, 2010). It is most often a disliked subject though it is thought to be the most rewarding activity (Irene, 2014). Hence, teachers must provide more enticing classroom-based writing tasks to spur students’ interest in producing varied academic texts that fit to their intelligence.

Meanwhile, content knowledge is inseparable aspect that the student should have before writing the paper. The teachers observed that the students mean percentage score in the content knowledge in research is below the standard passing rate set by the Department of Education. Therefore, there is a need to increase the content knowledge of the students prior to writing activity.

Learning is acquired in different ways. However, Sternquist (n.d.) claimed that “the best way to teach is to remember what it is like to learn”. Whether student’s intelligence is visual, spatial, kinesthetic, interpersonal and intrapersonal, still they are encouraged to write, organize concepts, put their ideas in graphical representation, record notes, answers reflective questions and be creative through the use of Interactive Student Notebook (ISN) for learning to take place SAISD Social Studies Department (n.d).

According to Endacott (2007), ISN is a unique but simple influential fun tool for organizing everyday activities in a creative, colorful, and meaningful way. It is an instructional tool that helps to meet the needs of the students by providing opportunities for teacher directed input and student-directed output that covers the content while taking advantage of the variety of ways that students learn. It is also developing students’ thinking in ways that prepare them to be part of the 21st-century workforce, increasing
communication between stakeholders, and differentiating instruction (Teaching Science with Interactive Notebooks, nd.).

Rensing (2012) developed a notebook protocol for the high school Chemistry classroom of Iowa State University, Ames, Iowa to increase Science literacy in high school students using a protocol that emphasizes writing. A protocol or lesson sequence comprises a code of behavior to encourage learning through reflection, writing, and self-assessment. A basic protocol may have sequence of writing elements or tasks which enables the students to master content and express mastery through writing.

Interactive Physics Notebook (IPN) as an approach in determining the level of skills in self-directed Physics learning (SDL) was conducted by Villareal, Barguilla and Reserva (2013). Although both control and experimental groups attained significant increase of SDL skills and physics learning between pretest and posttest, the experimental group had higher level of SDL skills and physics learning which implies that IPN helped increase students SDL skills and physics learning.

However, using ISN is thought by TIC (2009) that maybe it will be perceived by the students as busy work or maybe students may not see it as potential benefits. In addition, they felt it being additional work for the teachers to initiate the program and may require additional grading time or a time-consuming task. In the study of Madden (2001), results revealed about those who lost their notebooks. Two teachers used but discontinued it. They even do not respond to the researcher's interview. Therefore, the researchers are looking into this perspective to plan in addressing the disadvantages.

Furthermore, although techno-savvy approaches are great ways to bring resources into the classroom, a study concluded that student best when they have to write things down. Aside from enhancing students' notetaking skills, it could also improve understanding when asked to cut, color, summarize, show relationship, write answers on discussion questions which proven benefits is memory retention (Sternquist, n.d.).
Knowing its significance, the researchers therefore took the initiative to use students' notebook as an interactive instructional helper to improve the research writing skills of Grade 12 students in Practical Research 2 in which they performed poorly.

**Significance of the Study**

**Students.** Learning research concepts and research writing is typically challenging to students. Organizing concepts and examples in the notebook would provide structured information to the students and would help them build on the learning they already know.

**Research Teachers.** Useful for teachers in meeting the needs of their students. Tapping students’ multiple intelligence would enable the teacher to develop a plan and present a lesson in a variety of way that is unique for the ability of the learner.

**School Administrator.** This would be of great help for the school to plan for School Based Management (SBM) In-Service Training seminars and workshops for the enhancement of teachers’ capability in addressing students’ multiple intelligences.

**Conceptual Literature**

**Origin of Interactive Notebook**

Student Interactive Notebook (ISN) was initially developed by Swenson, et al (1970) of Aragon High School, San Mateo, California. The teachers at Teachers Curriculum Institute (TCI) contacted Lee in 1992 when they saw improved instruction. Lee then collaborated with teachers at TCI to refine his ideas by creating standard guidelines for students and teachers and by expanding a variety of graphic organizers (Teachers Curriculum Institute).

**Interactive Student Notebook Design**

For the purpose of interaction between teachers and students, the notebook is designed with two sides when spread open in a desk. The right hand is for the teacher-directed activities and inputs that the students take notes like class notes, reading notes,
video notes, and teacher document handouts while the left hand is reserved for the students to process and display what they have learned. It is the creative side where students process new ideas provided by the teachers like paraphrasing. It is where students sketch cartoons, highlight key ideas, timelines to illustrate chronology, and other ways of transforming written concepts into visuals (What is the Interactive Notebook? n.d.). It is where the students travel and penetrate beyond the regular classroom for better understanding. Students connect to teacher’s input based on their learning style.

Student-designed inputs in the left hand can be in a form of Venn diagrams to show relationships, use arrows to show cause and effect, sketch cartoons to show people and events and summarize ideas (Trucillo, 2006).

ISN can be in a form of spiral notebook, composition notebook, ring binder, teacher made and stapled. The components include front cover, table of contents, frequency of assessing the lessons, author page. Furthermore, it is necessary that before the ISN implementation, the teacher will orient the students about the guidelines. Let them know the purpose, the materials needed, what goes in their notebook, how to grade their notebook, and what happen when they are absent.

Some teachers create an assignment sheet that can be glued into the notebook. This assignment sheet mirrors the table of contents, and each page is evaluated individually for a predetermined number of points.

**Assessment of Interactive Student Notebook**

Interactive notebook evaluation can take various forms. It can be graded daily, bi-weekly, weekly or after each unit. One advantage to the latter type of assessment is that students see their work as ongoing and cumulative. Assignments are no longer graded and gone; they instead become a part of a larger comprehensive unit, and the notebooks can be collected following each test for grading. Teachers can individualize the grading process as well. Another way to evaluate notebooks is to look at the body of work holistically. Instead of grading individual assignments, the notebook is evaluated using
categories using as quality and completeness, visual appearance, organization, and
notebook care and elements (Endacott, 2006). Evaluating the notebook can be graded
through using rubrics.

**Research as Challenging Writing Task**

“Research writing as perceived by majority is challenging or even the most
problematic task in college. It is not an easy task especially to novice researchers.
Students have to work independently and need special skills in synthesizing and writing
coherent idea. They even have difficulty aligning the title to the objective of the study, to
the theoretical/conceptual framework and to their research instrument.

Students never realized its indispensable value in their respective disciplines and
target workplaces (Bernardo, 2010).

**Interactive Student Notebook (ISN) and Writing as Cognitive Process**

According to Gilbert and Koleman (2005) and Young (2003), notebooks offer
numerous opportunities to develop and enhance students’ writing skills. It also help
improve students’ organizational skills. Writing is the most powerful tool for thinking,
learning and participating in the broad culture of society (Casey, Downing, Hays, Molloy &
Samson, 2003). It is a tool that encourages to use writing for thinking and empowers
students to be active in their learning (Gilbert & Kotelman, 2005 as cited by Rensing,
2012). Writing as a cognitive process is an important component of the interactive
notebook. “When students explain what they have learned in writing, they are forced to
clarify and organize thoughts and ideas in a way that others can understand” (Young,
2009). The use of concept maps to integrate new ideas with prior knowledge can help the
teacher to check understanding (Vanides, Yin, Tomita, & Ruiz-Primo, 2005).
Communication of learning can be achieved with activities such as graphs or tables,
diagrams, models, or other visual representations (Casey et., 2003).
Interactive Student Notebook and Multiple Intelligences

Students exhibit different learning styles and multiple intelligences (Sousa, 2011). Thus, presented information must be relevant to the student and activities must immediate connection to real world for learning to take place. Teachers Curriculum Institute (TCI) posited that ISN provides a cohesive structure and serves as organizational anchor for multiple intelligence activities. They encourage students to use a variety of intelligences. Elements such as graphs, maps, illustrations pictowords, and visual metaphors are importantly utilized in the writing of the ISN. Musical intelligence may also be cultivated by asking students to compose a song or react to a piece of music in writing; intrapersonal intelligence by allowing students to reflect on how history affects them; interpersonal strengths by serving as a place to record group discussions and project notes; and logical-mathematical intelligence through the use of sequences, graphs, and charts (1999, p. 137, italics in original).

Teachers Curriculum Institute (n.d.) enumerated advantages of using an ISN. These include the following: it is a vehicle for differentiation, provides accommodation for multiple intelligences and learning style differences, provides opportunities for creativity and personal expression, notetaking becomes a more positive experience, student are more actively engaged, students are given opportunities to make choices (increases internal locus of control) and learners independence is fostered. Teaching in a manner that connects to real world experiences is an ongoing challenge for teachers. In order to implement inquiry learning adequately, students must have a sound understanding of concept.

ISN offers an exciting twist on the conventional notebook. Students are more responsible for their own learning. The artworks, graphics, timelines, maps, song lyrics and personalized responses to the subject matter provides the student more interest, more involvement, more creative, more independent thinkers, more learning and better instruction (Teachers Curriculum Institute, n.d.). In addition, TCI further claimed that ISN served as chronological record of their work and help reinforce major concepts and themes.
in the unit. They see how everything connects. Students’ design treatment may take a wide of variety of forms from simple to complex, from pictorial to abstract.

One of the most powerful ways to improve students' comprehension and retention in any subject area is to have them complete innovative, graphically organized notes on the reading they do for each lesson. Graphic organizers like Venn diagram, Spoke Diagram; illustrated outlines, matrices, annotated images, illustrated timelines, mind maps, T-charts and sensory figures help students see the underlying logic and connections among concepts. In addition, ISN helps process assignments. Processing assignments are lesson-wrap up activities that challenge students to synthesize and apply the information they have learned. Examples of processing assignments are advertisements, annotated illustrations, caricatures, commemorative markers, eulogies, facial expressions, flow charts, forms of poetry, illustrated Dictionary Entries, illustrated proverbs, invitations, journals, metaphorical representations, mosaics, Perspective pieces, pictowords, political cartoons and comic strips, postcards, posters, report cards, spectrum (TCI).

In addition, Marzano, Pickering, and Pollock (2001) identified nine effective strategies such as identifying similarities and differences, summarizing and notetaking, reinforcement effort and providing recognition, homework and practice, nonlinguistic representations, cooperative learning, setting objectives and providing feedback, generating hypotheses, Questions, cues, and advance organizers.

The benefits of using interactive notebooks are not only to be had by students. Interactive notebooks are easy to grade, and when students are absent, they can look at another student’s table of contents to see what they missed the day before. The skill in organizing is developed using ISN. According to Molloy et al. (2012), “Organizing contents provides schema or scaffolding structures to aid the brain in understanding science content” (Molloy et al., 2012, p.1).
Research Literature

*Interactive Student Notebook and Multiple Intelligence*

According to Gardner (1993) there are eight different types of intelligences; verbal/linguistic focuses on reading, writing, listening, and discussing. Logical intelligence is the ability to think words and use language to express meaning (Campbell, Campbell & Dickinson, 2004) while logical-mathematical intelligence is stronger in questioning, thinking and problem-solving. It makes calculation, considers propositions and hypotheses as well as carrying out mathematical operations. The visual/spatial is able to form a mental model of a spatial world and be able to maneuver and operate using model (Gardner, 2006). Students from this intelligence helps students to think about concepts in three dimensional ways, encode and decode information and create and transform or modify images. The musical/rhythmic intelligence emphasizes rhythm and music in learning and expressing oneself. They are sensitive to pitch, melody, rhythm and tone, bodily/kinesthetic, naturalistic, interpersonal and intrapersonal. Though students tend to be strong in some intelligence’s areas and weak in others, it is important for them to be exposed to all types of intelligences. Teachers can use the interactive notebook to plan lessons to reach the broad spectrum of intelligences. Teachers who used multiple intelligences strive to present subject matter in ways that use language, numbers, physical surroundings, sound, the body, and the social skills (McBrien, n.d.).

*Studies about Literature that Supports Interactive Student Notebook*

Wist (n.d), examined the literature that supports the use of interactive notebooks as an effective learning tool. He was interested to understand the theories behind the use of ISN. The literature of brain research, multiple intelligence and notetaking support the classroom use of interactive notebook. Though he found out that there was lack of research directly applied to interactive notebook, but still his findings support the use of ISN in the classroom when appropriate.

*Interactive Student Notebook and its Effect to Student Writing*

The purpose of this study was to determine whether or not my practice of implementing Interactive Science Notebooks (ISN) impacts 4th grade students writing in
science. Through this action research, students' writing was analyzed to determine whether the use of ISN affected students' use of details, support claims and justifications in their written responses. Also, through the use of the Interactive Science Notebook, students' use of science vocabulary in their writing was also analyzed. Finally, students' reflective writing practices were examined in order to determine how students understood and explored physical science. A triangulation of data gathered consisted of the use of rubrics, focus groups and one-on-one conferencing. The data collected from this action research implied that the Interactive Science Notebooks did indeed have an impact on students' scientific writing. Students writing reflections demonstrated an increase in the use of claims and evidence, and meaningful questions related to the science topic investigated (Braxton, 2010).

In detail, students used a variety of expository writing to further promote their learning of science concepts. In the lab safety unit, students used narrative writing to explain what went wrong in the science lab to change a scientist into a “labrador.” For a unit on lab equipment, students used descriptive writing and labeling to construct and categorize a concept map. Students had the freedom to sort and categorize types of lab equipment according to their understanding. Students also used procedural writing in their IAN by designing a controlled experiment in the “Glow Stick Lab.” Additional forms of expository writing that may be found in the students’ interactive notebooks include explanatory writing and persuasive writing (Rensing, 2012). Gilbert and Kotelman (2005) further elaborate that as a tool, the interactive notebook encourages students to write for thinking and empowers the students to become active in their own learning.

**Interactive Student Notebook and Organization**

In addition, the findings of Madden (2001) revealed that out of seventy students surveyed, eleven students stated that they learned more as a result of using ISN. Thirty-two responded that they were more organized and better able to find items when necessary. Five responded they were more organized but did not necessarily learn more. Twelve students stated that they did not learn
more and seven submitted they did not keep a notebook. In addition, five teachers (one math
teacher, one biology teacher, and five social studies teachers) stated that the notebooks helped their
students stay organized and more likely to take notes.

The action research of Twar (2003) collected an In-class observations of student
utilization of their ISNs and out-of-class observations of students’ to assess how well
students were able to keep their ISNs neat and organized. It was observed that most of
the students were able to keep their ISNs complete and organized.

**Interactive Student Notebook and Constructivism**

The purpose of the qualitative case study of Jalandaki and Bhattacharya (2003) which is
grounded by the theoretical framework of interpretivism was to explore the in-depth understanding
of the experiences of inner-city high school teachers in South Texas when using interactive
notebooks to understand Physics concepts. The data were collected using interviews, participant
observations and document analysis. Two major themes emerged: Interactive Notebook- A
Testimony of Constructive Learning and Interactive Notebook—A Pioneering Approach to Instruction
which met the science education’s constructivist learning approach and implies transferrable
aspects of individualized learning processes where concepts are challenging for student to grasp.

**Interactive Student Notebook and Academic Performance**

Johnson (2013) implemented Interactive Science Notebooks with the intention of improving
student success in science. The notebook intervention format involved metacognitive strategies
including student-designed reflect and connect pages. Data collection instruments included a Likert-
style student confidence survey taken pre- and post-study, summative test score comparisons,
teacher reflective journal notes, classroom assessment techniques, rubrics for student notebook
entries, student and focus group interviews. The use of the interactive science notebook encourages
independent thinking, metacognition, and student confidence in science. The results indicate that
when students utilize the Interactive Science Notebook, they are more confident in their academic
skills, they are more organized, and they perform better on summative assessments. As a result of using the notebooks students demonstrate a stronger capacity to retrieve and apply the information in a variety of settings including real-life applications. When students are using the notebooks, the teacher feels satisfied that her students are participating in an authentic and effective learning experience.

Lieberg (2013) conducted a study using Interactive Science Notebook to enhance Science Instruction to two groups of second grade elementary students. The experimental group was taught using ISN receiving inquiry-based instruction while the other was taught using lecture format without the use of Science notebooks. These were used in the two topics in Science – matter and weather topics. Results concluded that the students who used ISN with inquiry-based instruction showed greater gains than those who were taught using lecture format.

The study of Twar (2003) concluded that though there was not a strong correlation between high ISN assessment scores and high topic assessment scores, the ISN was still a useful tool that assisted his students to keep organized notes and class work, and proved to be a useful reference and study tool. This was when he conducted an action research to observe the effectiveness of the utilization of an instructional tool called Interactive Student Notebook (ISN) on the understanding of the concepts and algorithms of addition and subtraction of fractions and mixed numbers for fifth grade mathematics students. The goal was to equip his students using the tool that would allow them to take and keep daily notes as well as conduct guided and independent practice in an organized fashion. Students utilized their notes, as class work reference and study tool to assist them with their homework as well as studying for assessments. Students shared by completing surveys, mostly positive feedback of the ISN process. They shared how often they used their ISNs at home as a reference and study tool and how useful they believed their ISNs were.

The action research project of Wilkins (n.d.) investigated the effectiveness of using a science interactive notebook to aid in increasing student achievement in science as the primary instructional tool. Nineteen (19) eighth grade students are the respondents who have exhibited prior challenges
with meeting proficiency with various scientific concepts, as measured through their fifth grade
science TAKS scores, as well as the district assessments taken in both sixth grade and seventh
grade. Based on the April administration of the Texas Assessment of Knowledge and Skills (TAKS
test), the results are encouraging and suggest that the science interactive student notebook as a
primary instructional tool was effective. By creating and applying their own understanding of scientific
concepts within the interactive notebook, the students were able to demonstrate proficiency of those
varied scientific concepts not only in their interactive notebook, but also on the high-stakes TAKS
test.

According to Molloy et al. (2012) as cited by Mollet (2017), note taking is a foundational skill
for successful learning in the classroom. Actively recording information to recall and reference later
involves thinking and learning. “When used effectively, notes can be the key to understanding
material and learning science”. In the case study of Mollet (2017) about ISN as learning tool in Biology
for high school students in Hamline University, organization was the first theme emerged. He was
surprised that his students realized that ISN do not only helped their organization but their learning
as well. They like organized notes because it helped their brain process all the information and it is
easier for them to study. Another theme emerged is notetaking. Ninety percent of his class did
notetaking. They developed their own systems in writing down and highlighting important points.
Another theme emerged is creativity. Many creative opportunities were given to students throughout
the year; such as one pagers, diagrams, and choices on what kind of left side activity they wanted to
complete to aid their learning. In addition, other themes emerged were variation, reference, and
student affinity which led to conclusion that overall, ISN students had more positive learning
outcomes to attribute to the science interactive notebooks than negative.

Mallozi (2003) conducted a study to determine whether the consistent use of
metacognitive strategies embedded in an Interactive Student Notebook (ISN) would
impact the science process skills of 7th-grade students and explored whether specific
teacher written feedback provided to students in the ISN, further enhanced the use of ISNs
and resulted in greater gains in students’ science process skills. One hundred ninety four
7th grade students who were conveniently selected participated in the study. The
independent variables were the following: one is ISN embedded with metacognitive strategies and specific written feedback, two is using ISN embedded with metacognitive strategies only, third is traditional Science program using regular classroom instructional practices for control group. Students’ process skills were measured through pretest and posttest. Qualitative surveys were used to gather the perception of students and teachers towards ISN use and specific written feedback. Result revealed that the experimental group scored significantly higher than the control group on mean posttest scores of the students. Qualitative analyses indicated that students in the treatment group believed that using the ISN and receiving specific written teacher feedback on the task to be helpful to their learning but there were no significant differences between the remaining groups. However, teachers believed that the ISN that verbal feedback was more effective than written feedback. The research of Otstott (2014) aimed to promote understanding of algebra I content knowledge.

II. ACTION RESEARCH QUESTIONS

The study aims to determine the effect of Interactive Student Notebook (ISN) in helping to improve the research writing skills of the students. Specifically, this aims to answer the following questions:

1. What is the pretest and posttest scores of students in Research/ Capstone Project learning competencies?
2. Is there a significant difference between the pretest and posttest scores in Research/ Capstone Project learning competencies?
3. What is the rating of the students in their research write ups before and after using ISN?
4. Is there a significant difference between the rating of the students in their research write ups before and after using ISN?
5. How do students perceive their experiences using interactive student notebook?
6. How do teacher perceive their experiences using interactive student notebook?
III. PROPOSED INNOVATION, INTERVENTION AND STRATEGY

This study aims to help improve the content knowledge of the students in the learning competencies of research and the research writing skills of the student by using Interactive student notebook (ISN). The researcher will further check how effective ISN is by conducting a focus group interview to both teachers and students.

Writing research is one of the difficult to accomplish as student. To address this challenge the teacher will use Interactive Student Notebook (ISN) as a tool to help improve the academic performance of the students and the research writing skills. Interactive student Notebook is a spiral notebook that is used to organize information. The right side is used for teacher information (notes, lectures, discussions, handouts, etc.). The left side is used for student information (drawings, cartoons, personalized wording of vocabulary, etc.) (Young, 2003).

This study is anchored in VAK Theory of Learning style by Fleming (2001) and Multiple Intelligences by Gardner which claimed that learners learned in different ways. VAK is the common and widely-used model of learning styles. According to this model, most people possess a dominant or preferred learning style; however, some people have a mixed and evenly balanced blend of the three styles. Meanwhile, Multiple Intelligences by Gardner (1999) consists of nine (9) learning styles namely: Visual/Spatial; Verbal/Linguistic; Mathematical/Logical; Bodily/Kinesthetic; Musical/Rhythmic; Intrapersonal; Interpersonal; Naturalist and Existentialist. While Rogers (1987) in his Experiential Theory expounds that significant learning takes place when the activities are relevant to the personal interest of the students. Another principle used to back up ISN is the Universal design for learning (UDL). According to Howard (2004), UDL is a framework that emphasized flexible curricula for the student to access content in different ways and express understanding in various forms. Students came from different learning environment with varying experiences, therefore construct different meanings.
The first box shows the independent variable of the study which is the use of interactive student notebook. Students will use the interactive active notebook by constructing graphic organizers such as Venn diagrams, Frayer Model, Concept Map, web map, and spider web. Other activity for the students is note taking, a practice of recording information captured from another source. The students record the essence of the information freeing their mind from having to recall everything. Reflective essays will be another activity of the students. They are going to examine their experiences, exploring how he or she changed develop or grown from their experiences. Another is highlighting and underlining information to help students organize what they have read by selecting what is important. They are going highlight/underline only the key words, phrases, vocabulary and ideas to help understand the lesson.

At the right box is the dependent variable. The teacher will check the significant difference between pretest and posttest scores of the students on the learning competencies in Research/Capstone Project, and check the significant difference of the pre-rating and post rating of the teachers on their student written research output by using rubric. This study will also investigate the perception of the students and teachers on the overall effect of the use of ISN in taking and in handling Research/Capstone Project courses.
Scope and Limitation

This study will be delimited in determining the significant difference between the pretest and posttest scores of the students in the selected topics of Research/Capstone Project as well as checking the significant improvement in their writing skills in research. This effect will be validated further through qualitative surveys by asking the views of the students and teachers towards ISN application.

The respondents of this study will be revolving around the 3 intact classes of Grade 12 students in Agusan del Sur National High School, School year 2019-2020. The said school is located in Brgy 5, San Francisco, Agusan del Sur, and is along the maharlika highway bound to the province of Surigao del Sur. The selection of respondents is based on the sections handled by Research/Capstone Project teachers in the said school and the students first-handly experienced the learning difficulty of the competency both in learning the concepts and in writing the content of the research paper. The determination of the scope ensures the “No-disruption-of-classes Policy” of the DepEd. The conduct of the study will start after the first quarter examination.

IV. ACTION RESEARCH METHODS

a) Participants and/or other Sources of Data and Information

The study is Quasi-experimental design involving 3 intact Grade 12 classes from Science, Technology, Engineering, and Mathematics (STEM) sections. First research instrument will be the self-made pretest and posttest to check the significant increase of the mean scores of the students. Second is the self-constructed rubric to check the increase of the competence of the students in writing research paper. Third is the interview guide questions adopted from Baxter (1998) page 31 and Zuber (2004), page 24, and Mallozi (2003) page 97-98 and revised by the researchers to check the views and opinions of the students and the interview guide question for teachers on page 54 of Mallozi’s paper.
This initiative took place since the researcher together with his co-teachers found the low academic performance of the students based on summative test results and needs improvement rating on their research papers in Research/ Capstone Project. The pretest and posttests will be designed based on the conventional format used by the DepEd cascading the least mastered competency based on result of the study conducted the students in Research/ Capstone Project, School Year 2019-2020.

b) Data Gathering Methods

The researchers will use purposive sampling. All the students under the sections handled by the researcher will be chosen.

Table 1. *Distribution of strata per section on the Grade 12 students*

<table>
<thead>
<tr>
<th>Section</th>
<th>Student Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ptolemy</td>
<td>45</td>
</tr>
<tr>
<td>Descartes</td>
<td>45</td>
</tr>
<tr>
<td>Copernicus</td>
<td>43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>133</strong></td>
</tr>
</tbody>
</table>

Prior to the giving of interventions, the researchers designed a 20-item test (Multiple Choice) using a Table of Specifications. The pre/posttest will undergo face and content validation by three Research teachers to ensure its content validity. The said test will be given to the respondents as pre-test, the papers will be collected, checked, and recorded right after the retrieval. After the pre-test, respondents of the will be given interventions, and then posttest will be administered he papers will be collected, checked, and recorded right after the retrieval. To check the significant improvement of the students in their research writing, the students will write their paper prior to the interventions, data collection procedure, statistical treatment and writing presentation, analysis and interpretation of data. The researcher will rate their written outputs. After which, the teacher
will treat the students using ISN. Their research outputs will then be checked by the researcher upon the retrieval of their notebooks.

The researcher will write an approval letter to the School Head signifying his interest in conducting this study. The teachers especially the Grade 12 advisers will be informed about the conduct of this study. The researcher, before the conduct of pre and post-test, pre rating and post rating of their research papers and before the interview will inform the respondents about the complete confidentiality of the test results and research paper ratings.

c) Data Analysis Plan

Weighted Mean will be used to identify the average achievement of Grade 12 students based on their pre-test and post-test and to check the pre and post ratings of the teacher in their research output (Research Question no. 1 and 3).

T-test will be used to identify the significant differences between two variables with small sample size by section. This test specifically identifies the significant difference between the pre-test and post-test of students’ achievement and significant difference between the pre-ratings and post ratings of the researcher to their research output (Research Question no. 2 and 4).

Coding and creating themes will be used by the teacher to analyze the responses of the students and teachers about their views and opinions towards ISN. (Research questions 5 and 6).
## V. ACTION RESEARCH WORK PLAN AND TIMELINES

<table>
<thead>
<tr>
<th>TIMELINE</th>
<th>ACTIVITIES</th>
<th>FOCAL PERSONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 16-27, 2019</td>
<td>Preliminary Data Gathering</td>
<td>Researcher</td>
</tr>
<tr>
<td>September 30 - October 4, 2019</td>
<td>Development of Research Instruments</td>
<td>Researcher</td>
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<tr>
<td>October 7 – 25, 2019</td>
<td>Validation of Research Instrument</td>
<td>Researcher and Internal and external validators</td>
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<tr>
<td>October 28 – 31, 2019</td>
<td>Identification of Target Respondents</td>
<td>Researcher</td>
</tr>
<tr>
<td>November 2019</td>
<td>Data Gathering</td>
<td>Researcher, Respondents, School Heads</td>
</tr>
<tr>
<td>December 2 – 12, 2019</td>
<td>Data Analysis and Manuscript Writing</td>
<td>Researcher and Resource Statisticians</td>
</tr>
<tr>
<td>December 13, 2019</td>
<td>Submission of Manuscript to Division Office and Writing Approval Paper for Publication</td>
<td>Researcher, Division Office Personnel</td>
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VI. COST ESTIMATES

<table>
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<tr>
<th>MATERIALS</th>
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<th>UNIT</th>
<th>UNIT COST</th>
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<tr>
<td>Bond paper (letter) substance 20</td>
<td>12</td>
<td>Reams</td>
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<td>2,340.00</td>
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<td>Ink Epson L220</td>
<td>6</td>
<td>Bottles</td>
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<td>Snacks for respondent orientation</td>
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<td>P3,000.00</td>
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<td>Supplies and materials</td>
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<td>P20,000.00</td>
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<td>Honoraria for Research Enumerators</td>
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<td></td>
<td>P2,000.00</td>
<td>2,000.00</td>
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<tr>
<td>Post Conference for Result Dissemination</td>
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<td></td>
<td>P1,000.00</td>
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<td>TOTAL</td>
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<td>30,440.00</td>
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</table>

VII. PLANS FOR DISSEMINATION AND UTILIZATION

The result of the research will be disseminated by presentation in an international research conference and division level research colloquium. The Interactive Student’s Notebook (ISN) will be utilized by the proponent teachers in Research subjects for Senior High School at the Agusan del Sur National High School. The utilization of the method will be recommended to the school’s administration, teachers and staff for consideration, especially if the results are favorable.
VIII. REFERENCES


Teachers’ Curriculum Institute. (n.d.). Using the Interactive Student Notebook

Ottstott, A. Interactive notebooks: using interactive notebooks in the algebra 1 classroom to promote understanding


