

Comic Themed Booklet Worksheet as Supplementary Materials in Physics

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Abstract

Everyone needs to have access to education. No of the circumstances we are facing, it will always continue. Teachers will figure out ways to assist and guide students as they adjust to and learn about with this "new normal". All students may benefit from any learning style and supplemental materials provided by the teachers. The purpose of this study was to determine the level of acceptability of a comic themed booklet worksheet as supplementary material in physics in terms of content, adaptability, appeal to target user, and presentation; the students' mean pre-test and post-test performance; and significant difference in the students' mean pre-test and post-test performance.

The population of the study comprised sixty (60) selected Grade 7 students who utilized the supplementary materials and twenty (20) science teachers from Pagsanjan Integrated National High School who validated the supplementary materials. The research instrument used in this study was Survey Questionnaire to be answered by the teacher and pre-test and post-test throughout the third quarter of School Year 2021-2022.

From the data yielded from the instruments, the researcher came up with the following results. The acceptability of comic themed booklet worksheet in terms of content, adaptability, appeal to target user, and presentation was highly acceptable for the science teacher. They noticed that the topics and the learning objectives are aligned on the Most Essential Learning Competencies (MELCs) for Grade 7 set by the Department of Education (DepEd) that will lead to the mastery of the targeted MELCs. The illustrations, the concept, terms and facts in the comic themed booklet are adequate to physics examples to help students understand the lesson easily. The supplementary materials match to the student's interest. It has dialogue that discusses the lesson and helps the students get involved in the science process. Students can adapt to the lesson from the comic themed booklet. It implies that the funny illustration and dialogues of the characters in the comic as well as the design appreciated by students. It helped them understand the lesson and develop their comprehension. The overall presentation found to be catchier for the students, because the themed was from a very timely and much known anime characters. This might help sustain the students' interest to continue reading each lesson in the booklet.

Overall, the level of students' means performance in terms of pre-test and post-test as per the pre-test was fairly satisfactory. As per the post-test the result was very satisfactory. It means that the goal of the teacher to help using improve in their performance academically in physics has somehow achieved. The null hypothesis of the study "There is no significant difference in the students mean performance in terms of pre-test and post-test" is rejected. The researcher concluded that the comic themed booklet worksheet was a major assistance for the students in learning the physics concept and idea in improving their pre-test and post-test performance. From the findings the researcher recommended that teacher should keep on innovating and developing new supplementary materials for the students learning development. For future researcher, aside from physics you can propose other variables to be considered in developing this kind of comic themed booklet worksheet. Teachers and researchers can also develop other components of science as supplementary materials.

Keywords: Comic Themed Booklet, Supplementary Material, Science concept, Physics

1. INTRODUCTION

In the educational context, the pandemic did drastic changes to the educational system. But COVID-19 was not a big hindrance in continuing its mission to educate all Filipino youths in the Philippines. The Department of Education (DepEd) implemented Distance Learning Delivery Modalities (DLDM) that caters learners of different living situation today in the new normal. The Department of Education (DepEd) developed modular distant learning as a mode of learning delivery. It's a type of personalized instruction that encourages students to study on their own time. It motivates students to learn the material offered in the module. It can either be in digital format/electronic copy or printed hard copy format.

The school provides the learning resources in the form of modules. Learning packets refer to printed modules that comprise work sheets, activity sheets, and self-learning materials (Codamon, 2020). These learning materials have been produced by the teachers and are ready for parents/guardians to pick up at the indicated classroom, date, and time.

Students' output will be submitted every two weeks to fulfill COVID-19 Inter-Agency Task Force (IATF) protocol and to limit outside exposure of parents/guardians and teachers. A retrieval and distribution would take place every two

weeks. The Weekly Home Learning Plan (WHLP) was designed and monitored using an online platform. Each adviser and subject teacher communicates and monitors the students using an online platform.

It may appear simple and effective in the procedures, but some learners may be unable to cope with daily learning tasks/lessons, unfinished weekly output, and comprehension difficulties due to several barriers such as a lack of parental/guardian monitoring and lack of devices. As a result, their academic performance, particularly in science class, has deteriorated. As a result of this issue, science teacher had created a comic themed booklet worksheet as a supplementary material to help students enhance their physics academic performance.

Researchers designed comic-themed booklet worksheets as supplementary materials in physics to help students acquire the concept of physics. The comic themed booklet worksheet's drawings/illustrations were inspired by the Japanese anime "One Piece." Many people, both young and old, have enjoyed this anime. This anime is also a major hit with the researcher. While the researcher was working on the comic-themed booklet, joy and hope filled her heart as she realized that this would be a huge aid to students in understanding physics concepts.

Science subjects were challenging for students to comprehend independently. During the pandemic, interaction with their scientific teacher had also grown more difficult (Alawamleh, 2020). As additional material, the comic themed booklet worksheet intends to provide suitable concept, instructions, and activities to boost students' interest and enthusiasm in learning while facing challenges during the pandemic. The learning objectives of the comic themed booklet worksheet were aligned with the Department of Education's Most Essential Learning Competencies.

1.1 Objectives of the Study

This study aims to investigate comic themed booklet worksheet as supplementary materials in physics. It will specifically focus on finding answers to the following research problem:

Specifically, this study will answer the following questions:

1. What is the level of acceptability of comic themed booklet worksheet as a supplementary material in terms of:
 - 1.1 Content;
 - 1.2 Adaptability;
 - 1.3 Appeal to target user; and
 - 1.4 Presentation;
2. What is the student's mean performance in terms of:
 - 2.1 Pre-test
 - 2.2 Post-test?
3. Is there a significant difference in the students' mean performance in pre-test and post-test?

2. METHODOLOGY

2.1 Research Design

This study used an experimental research design, more particularly, a quasi-experimental research design. Since the participants are not chosen at random, quasi-experiments are utilized when randomization is difficult or impossible. To determine the mean performance of the students' pre-test and post-test, the researchers utilized a pre-test and post-test control group design. By using mathematical method (statistic), the collected numerical data were evaluated.

This research is designed to determine the level of acceptability of a comic themed booklet worksheet as supplementary materials in terms of its content, adaptability, appeal to target user. It was validated by twenty (20) science teachers; and utilization of the comic themed booklet worksheet by three sections namely: A. Dagui, F. Balagtas, and F. Arcellana composed of 60 select students.

2.2 Respondents of the Study

The respondents were deliberately selected. In this study, a technique known as "purposive sampling" was used. Respondents were selected in accordance with the study's goals, which were students in grade 7. Only those who would use the supplementary materials and would answer to the pre- and post-tests were chosen as respondents. The respondents were sixty (60) selected grade 7 students from three (3) sections namely: A. Dagui, F. Balagtas and F. Arcellana and twenty (20) science teacher of Pagsanjan Integrated National High School of the current school year (S.Y. 2021-2022). The study will also focus on the acceptability of comic themed booklet worksheets as supplemental materials in physics.

2.3 Research Instrument

In order for the variables to be answered the following instruments were utilized in this study.

Pre-test and Post-test

The researcher used pre-test and post-test instrument to determine whether the participants' responses to using the comic-themed booklet worksheet as supplemental material had the desired effect or produced the desired results and changes. Both the pre-test and post-test were consisted of fifty (50) questions.

Survey Questionnaire

The researcher use survey questionnaire for the acceptability of the science teacher to the comic themed booklet worksheet that was composed of 20 questions in Likert scale in which respondents specify their level of agreement to a statement in 5 points: (1) Strongly disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly agree. The researcher used this to determine the level of acceptability of comic themed booklet worksheet as supplementary materials in physics in terms of content, adaptability, appeal to target user and presentation.

2.4 Statistical Treatment

After gathering the required data, the researcher used statistical techniques to tabulate and analyze the data for simple interpretation and presentation.

Mean and Standard Deviation was used to determine the level of acceptability of comic themed booklet worksheet as supplementary materials min physics in terms of content, adaptability, appeal to target user and presentation. The scale used to interpret the result of the questionnaire is listed below.

Legend	Scale	Remark	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.21-4.20	Angree	Acceptable
3	2.61-3.40	Neutral	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

Mean and Standard Deviation was also used to determine the students' average performance on the pre- and post-tests. T-test for the average of two samples or an impartial T-test was used to determine whether there was a significant difference between the students' mean performance on the pre- and post-test.

3. RESULTS AND DISCUSSION

This chapter deals with the presentation, analysis and interpretation of data gathered from 60 selected Grade 7 students and 20 science teachers in Pagsanjan Integrated National High School.

Acceptability of Comic Themed Booklet Worksheet

In this study the acceptability of about comic themed booklet worksheet in terms of content, adaptability, appeal to target user and presentation were presented by the following table. Twenty science teachers were given survey questionnaires to evaluate its acceptability.

Level of Acceptability of Comic Themed Booklet Worksheet as Supplementary Materials in Physics in Terms of Content

Science teachers noticed that the topics and the learning objectives in the comic themed booklet worksheet are based and aligned on the Most Essential Learning Competencies (MELCs) that leads to the mastery of the targeted MELCs (M=5.00, SD=0.00). The illustrations in the comic themed booklet are adequate to Physics examples to help students develop science concept (M=4.80, SD=0.41). The concept, terms, and facts are detailed to help the students easy to understand (M=4.35, SD=0.49). They also noticed that the activities are aligned to the learning objectives (M=4.95, SD=0.92).

Table 1. Level of Acceptability of Comic Themed Booklet Worksheet as Supplementary Materials in Physics in Terms of Content

STATEMENT	MEAN	SD	REMARKS
1. The topic in the comic themed booklet worksheet are based on the Most Essential Learning Competencies (MELCs)	5.00	0.00	Strongly Agree
2. The learning objectives are aligned to the learning competencies and leads to the mastery of the targeted MELCs.	5.00	0.00	Strongly Agree
3. The illustrations are adequate to Physics examples for concept development.	4.80	0.41	Strongly Agree
4. The concepts, terms, and facts are detailed and easy to understand.	4.35	0.49	Strongly Agree
5. The activities are aligned to the learning objectives.	4.95	0.22	Strongly Agree

Overall Mean = 4.82

Standard Deviation = 0.92

Verbal Interpretation = Very High

Legend	Scale	Remark	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.21-4.20	Agree	Acceptable
3	2.61-3.40	Neutral	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

The overall mean of 4.82 indicates that science teachers found comic themed booklet worksheets in Physics in terms of content to be highly acceptable as supplemental materials in Physics. This means that one of the most significant considerations in using comic themed booklets in physics as supplementary materials is the content in weekly lesson. The lesson objectives should be properly identified as most essential learning competencies that will suits the needs of the students. It will motivate students to concentrate on the lesson's goals. Their concentration will benefit them in improving their academic performance. A developed comic strip helps the students understand the lesson and learned new things (Enteria, 2019). The general goals for each lesson are included in the supplied supplementary materials. It was made clear because this is an essential tool for assisting students in achieving their educational objectives (Malicoban, 2021).

Acceptability of Comic Booklet Worksheet in terms of Adaptability

Science teachers found out that the comic themed booklet worksheet as supplementary materials in Physics helps the students to increase their learning and understanding to become more independent in answering the activities (M=5.00, SD= 0.00). The characters in the comic-themed booklet have a dialogue that discusses that idea in a way that the students understand (M=4.80, SD=0.41). It also helps the learner to get involved in the learning process (M=4.90, SD=0.31).

Table 2. Level of Acceptability of Comic Themed Booklet Worksheet as Supplementary Materials in Physics in Terms of Adaptability

STATEMENT	MEAN	SD	REMARKS
1. The comic themed booklet helps the learner to increase their learning and understanding about the different concepts discussed.	5.00	0.00	Strongly Agree
2. It relates to the present learning needs in Physics.	5.00	0.00	Strongly Agree
3. It helps the students to become more independent in answering the activities	5.00	0.00	Strongly Agree
4. It is easy to understand because the characters in the comic themed booklet have dialogue and they are the one discussing the concepts.	4.80	0.41	Strongly Agree
5. It helps the learners to get involved in the learning process.	4.90	0.31	Strongly Agree

Overall Mean = 4.94

Standard Deviation = 0.14

Verbal Interpretation = Very High

Legend	Scale	Remark	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.21-4.20	Agree	Acceptable
3	2.61-3.40	Neutral	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

In terms of adaptability, science teachers regarded comic themed booklet worksheets in physics to be highly acceptable as supplemental materials, as indicated by the overall mean of 4.94. It implies that supplementary materials such as comic themed booklet worksheets in physics must be matched to the students' interests so that they can easily adapt and learn from it. Adapting new supplementary resources to engage grade 7 students in study is one of the study's primary variable (Diamond, et. al., 2021). The created comic book was an excellent teaching medium for students to boost their attention and reading comprehension skills, according to (Imperial et al., 2016).

Students can easily adapt to the supplementary materials if the materials itself catches students' attention. Students considered the use of the comic-based learning module enjoyable, convenient, and authentic, according to (Badeo and Ong Kian Koc, 2021). The more they enjoy and find it to be convenient the more they adapt the physics concept.

Acceptability of Comic Booklet Worksheet in Terms of Appeal to Target User.

Science teachers noticed that the comic themed booklet worksheet has high quality format, design and layout that catch learner's attention to read and study more of the topics (M=4.55, SD=1.51). They also noticed that comic themed booklet worksheet has entertaining illustrations and dialogues; has a theme (One Piece anime) that helps the students to get motivated, get positive attitude, and stimulate imaginations to enjoy while learning and helps students stimulate their imagination (M=4.95, SD=0.22).

Table 3. The Level of Acceptability of Comic Themed Booklet Worksheet as Supplementary Materials in Physics in Terms of Appeal to Target User

STATEMENT	MEAN	SD	REMARKS
1. The comic themed booklet has high quality format, design and layout that can catch learner's attention to read and study the topics.	4.55	0.51	Strongly Agree
2. It helps the student to get motivated and to have positive attitude towards learning physics.	4.95	0.22	Strongly Agree
3. It has entertaining illustrations and dialogues that lead the student to read more about the physics concept.	4.95	0.22	Strongly Agree
4. It stimulated learner's imagination.	4.95	0.22	Strongly Agree
5. It has a theme (One Piece) that helps the students enjoy learning the concept.	4.95	0.22	Strongly Agree

Overall Mean = 4.84

Standard Deviation = 0.28

Verbal Interpretation = Very High

Legend	Scale	Remark	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.21-4.20	Agree	Acceptable
3	2.61-3.40	Neutral	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

The overall mean of 4.82 suggests that the acceptance of the comic themed booklet worksheet in terms of appeal to target user is highly acceptable. It implies that the entertaining illustrations and dialogues of the characters in the comic, as well as the designs can really catch up student's interest to read the supplementary materials.

People who enjoy reading comic books tend to have more imaginative abilities and are generally happy as a result of the illustrations and images (Widyastuti et al., 2020). Students who ordinarily have little interest in reading traditional textbooks may find this to be quite appealing. Dialogues in a comic book-themed book speak to students in a way they can comprehend and recognize the physics concept. Comics can increase students' motivation and personal engagement while addressing scientific concerns. (Affeldt et al., 2018).

Acceptability of Comic Booklet Worksheet in terms of Presentation

Science teachers noticed that the comic themed booklet worksheet presents a lot of information, appropriate font size, dialogue box, and color about the topic discussed so students make it easy to grasp and understand the concept ($M=5.00$, $SD=0.00$). They also noticed that it presents important information to be remembered by the students ($M=4.9$, $SD=0.31$). It presents concept that will sustain learner's interest ($M=4.8$, $SD=0.41$). The supplementary materials presents concepts that are well-arranged order and in systematic manner ($M=4.95$, $SD=0.22$)

Table 4. The Level of Acceptability of Comic Themed Booklet Worksheet as Supplementary Materials in Physics in Terms of Presentation

STATEMENT	MEAN	SD	REMARKS
1. The comic themed booklet presents important information to be remembered by the learners.	4.90	0.31	Strongly Agree
2. It presents concept that will sustain learner's interest.	4.80	0.41	Strongly Agree
3. It presents appropriate font size, dialogue box, and color to help learners make it easy to grasp and understand the concept.	5.00	0.00	Strongly Agree
4. It presents concepts that are well-arranged order and in systematic manner.	4.95	0.22	Agree
5. It presents a lot of information about the topic discussed.	5.00	0.00	Strongly Agree

Overall Mean = 4.82

Standard Deviation = 0.80

Verbal Interpretation = Very High

Legend	Scale	Remark	Verbal Interpretation
5	4.21-5.00	Strongly Agree	Highly Acceptable
4	3.21-4.20	Agree	Acceptable
3	2.61-3.40	Neutral	Slightly Acceptable
2	1.81-2.60	Disagree	Less Acceptable
1	1.00-1.80	Strongly Disagree	Not Acceptable

The overall mean of 4.82 indicates that science teachers' acceptability in terms of presentation of comic themed booklet is highly acceptable. It implies that the presentation of comic themed booklet is also important variable in this study.

It also draws students' attention to the overall appearance that encouraged them to read and examine what inside the comic themed booklet worksheet.

Learners could communicate their thoughts using pictures and develop a language through the use of comic strips (Wiyaja et al., 2021). It also enhanced students' comprehension of language elements such as vocabulary and grammar, as well as their reading and writing skills. Comic strips, like acquiring written skills, enhance vocabulary or grammar used in dialogues, making the content more understandable for students.

Level of students' Mean Performance

Students were given pre-test and post-test before and after utilizing the comic themed booklet worksheet as their supplementary materials. As per the pre-test, out of sixty (60) students, thirty-seven (37) or 61.67% of the total population gained scores of 11 to 20 which was fairly satisfactory. This was followed in frequency by those who had scored 21 to 30 points which twenty-two (22) students or 36.67% of the population was identified to score as satisfactory. On the other hand, only one (1) respondent gained 0 to 10 points which did not meet expectations.

As per the post-test, out of sixty (60) students, twenty-nine (29) or 48.33% of the total population gained scores of 41 to 50 which was outstanding. This was followed in frequency by those who had scored 31 to 40 points which twenty-five (25) students or 41.67% of the population was identified to score as such. On the other hand, only six (6) respondents gained 21 to 30 points.

Table 5. Level of Students' Mean Performance in Terms or Pre-test and Post-test

RANGE	PRE-TEST		POST-TEST		REMARKS
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE	
41 to 50	0	0.00	29	48.33	Outstanding
31 to 40	0	0.00	25	41.67	Very Satisfactory
21 to 30	22	36.67	6	10.00	Satisfactory
11 to 20	37	61.67	0	0.00	Fairly Satisfactory
0 to 10	1	1.67	0	0.00	Did Not Meet Expectations
Total	60	100.00	60	100.00	
Overall Mean	18.90		39.92		
Standard Deviation					
Verbal	4.59		5.93		
Interpretation	Fairly Satisfactory		Very Satisfactory		

Overall, the level of students' performance in terms of pre-test and post-test as per the pre-test was fairly satisfactory with a mean score of 18.90 and a standard deviation of 4.59. As per the post-test, the results were very satisfactory with a mean score of 39.92 and a standard deviation of 5.93. The finding shows that the goal of the teacher to help students more improve in their performance has somehow achieved. It means that using comic-themed physics booklet worksheets as supplementary materials helped students reach their learning objectives and understand more about physics concepts. Some concept have retained in them. It also helped them get higher score in their post-test. Reading comprehension and retention were trained in using this comic themed booklet worksheet as supplementary materials in learning physics.

In terms of pre-test and post-test of student performance, there is a substantial difference. Students could comprehend their lesson using the comic themed booklet worksheet in physics as supplemental materials. Students have already seen the pre-test and had an understanding of what they would be learning for the entire quarter. The supplemental materials, according to the researcher, were a major aid for the students in getting a high score on their post-test.

Pre-test will help the learners focus on the key topics that will be covered within the whole quarter (Shivaranju, 2017). The use of a pre-test and post-test instrument to assess students' academic performance revealed that the learning objectives had been met. It will help students concentrate on the important ideas that will be covered throughout the quarter

Significant Difference on the Level of Student Mean Performance

The researcher clarified the test of difference on the level of students' mean performance in terms of pre-test and post-test. The t statistic -28.252 shows that there is an observed significant difference between the pre-test and the post-test. The post-test scores are likely greater than the pre-test scores, according to a negative t-statistic. Additionally, the statistic is far higher than the threshold of 2.001. The significance of the test is implied by the computed p-value of 0.000, which is less than the significance alpha of 0.05.

Table 6. Test of Difference on the Level of Student Mean Performance in Terms of Pre-test and Post-test

	Mean	t statistic	Critical t value	p-value	Analysis
Pre-Test	18.900	-28.252	2.001	0.000	Significant
Post-test	39.917				

The null hypothesis, "There is no significant difference in the students' mean performance in terms of pre-test and post-test," is rejected at the 0.05 level of significance, according to the aforementioned data. The pre-test and post-test results may be in some way influenced by the learning method, the study materials, and the attitudes of the students (Chudzicki et. al., 2015). The achievement of the learning objectives was demonstrated by the use of a pre-test and post-test instrument to assess students' academic performance.

It will make it easier for students to concentrate on the key topics that will be covered throughout the quarter (Shivaraju, 2017). Students scored lower on the pre-test since the topics had not yet been discussed or read in their modules. Students, on the other hand, post-test higher at the end of the quarter. It indicates students studied and understood physics concepts through a comic-themed booklet as their supplementary materials in physics, and they retained what they have learned in some way. If students enjoying what they are learning, they are more likely to attain their learning objectives and helps improve their academic performance.

4. CONCLUSION AND RECOMMENDATION

Based on the finding of the study, the following conclusions were drawn: The acceptability level of comic themed booklet worksheet as supplementary materials in physics in terms of content was highly accepted by the science teachers who evaluated the booklet. The objectives in each lessons, concepts and examples are all aligned in the Most Essential Learning Competencies set by the Department of Education. It is most essential for suitable for the level of the students for Grade 7. It will be a big help for the students to easily grasp the content of the booklet.

The acceptability level of comic themed booklet worksheet as supplementary materials in physics in terms of adaptability was highly accepted by the science teachers who evaluated the booklet. Students can readily understand the lessons and the physics concepts because they were written at a level appropriate for them.

The acceptability level of comic themed booklet worksheet as supplementary materials in physics in terms of appeal to target user was highly accepted by the science teachers who evaluated the booklet. The booklet's layout, color scheme, narrative, and characters all had a significant role in capturing students' interest. It will make the students happier as they read and finish the exercises.

The acceptability level of comic themed booklet worksheet as supplementary materials in physics in terms of presentation was highly accepted by the science teachers who evaluated the booklet. The booklet's design will encourage the learner to concentrate on their studies. They'll read more enthusiastically as a result, which will enhance their reading comprehension.

There is a significant difference in the mean performance of the students, according to result of pre-test and post-test results. This suggests that the students' learned abilities and knowledge have significantly improved. The booklet greatly aids the students in completing their weekly learning task. Their reading comprehension was enhanced as a result and attains strong academic success.

Recommendations

Based from the study, the following recommendations can be taken into consideration for future studies;

1. More modifications to science learning and supplementary materials may be proposed by the administrator to help students become more engaged in differentiated learning activities included in the learning materials. They can also be used in traditional classrooms or in any other type of learning environment.
2. Teacher may develop learning and supplementary materials not only in physics but to all components of science that would help students be more motivated in learning.
3. Teacher may also study the different learning style of students especially during pandemic.
4. Future researcher may propose other variables to be considered in developing comic themed booklet worksheet as supplementary materials.

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