

## One-Minute Paper (OMP) as a Formative Assessment

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### Abstrak

Dalam proses pengajaran, beberapa poin kuis harian tidak dapat menjamin peningkatan tingkat pemahaman siswa karena mungkin disebabkan oleh faktor yang berbeda, salah satunya adalah penilaian formatif yang diterapkan pada siswa yang tidak efektif. Tujuan dari penelitian ini adalah untuk menganalisis keefektifan One-Minute Paper (OMP) sebagai penilaian formatif yang berkontribusi secara bermakna terhadap peningkatan nilai siswa kelas sembilan pada penilaian sumatif mereka. Penelitian tindakan kelas ini menggunakan desain quasi-experimental pre/post-test design. Subyek penelitian ini terdiri dari empat belas siswa yang tergolong kelompok eksperimen yang berpartisipasi dalam diskusi yang dipimpin guru dengan integrasi kertas satu menit sebagai penilaian formatif mereka. Data diperoleh dengan menggunakan pertanyaan terbuka. Pemberian umpan balik pada hari berikutnya kelas dilakukan sebagai bagian dari intervensi. Hasil penelitian menunjukkan kelompok pembandingan dengan empat belas siswa yang diklasifikasikan sebagai kelompok kontrol telah melakukan penilaian formatif dengan cara tradisional – kuis. Kedua kelompok jatuh di wilayah yang diterima pada tingkat signifikansi 5% dengan keuntungan rata-rata 9 dan 6, masing-masing. Terungkap bahwa kedua metode tersebut efektif dalam meningkatkan nilai siswa karena nilai rata-ratanya yang lebih tinggi. Namun, skor perolehan rata-rata kelompok eksperimen dan skor persentase rata-rata (MPS) secara signifikan lebih tinggi daripada kelompok pembandingan; dengan demikian, makalah satu menit lebih efektif daripada kuis sebagai penilaian formatif.

**Kata kunci:** Kuis, Pertanyaan Terbuka, Penilaian Formatif, Penilaian Sumatif

### Abstract

In the teaching process, several daily quiz points cannot guarantee an increase in the level of student understanding because it may be caused by different factors, one of which is the formative assessment applied to students who are not effective. The aims of this study is to analyse the effectiveness of a One-Minute Paper (OMP) as a formative assessment contribute meaningfully to increasing the scores of ninth grade of students on their summative assessment. This action research employed a quasi-experimental pre/post-test design. Subject of this study consist of fourteen students who were classified as experimental group who participated in the teacher-led discussion with the integration of one-minute paper as their formative assessment. The data obtain using open-ended question. Feedback-giving on the next day of class were done as part of the intervention. The result of study show a comparison group with fourteen students who were classified as control group had done the traditional way of formative assessment – the quiz. Both groups fall in the accepted region at 5% level of significance with mean gains of 9 and 6, respectively. It was revealed that the two methods were effective in increasing the scores of the students due to their higher mean scores. However, the experimental group's mean gain score and mean percentage score (MPS) were significantly higher than the comparison group; thus, one-minute paper is more effective than quiz as a formative assessment.

**Keywords:** Quiz, Open-Ended Questions, Formative Assessment, Summative Assessment

#### History:

Received : May 02, 2022

Revised : May 03, 2022

Accepted : June 15, 2022

Published : July 25, 2022

**Publisher:** Undiksha Press

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## 1. INTRODUCTION

Assessment of the students' learning after a lesson/chapter is the most common activity that is done by teachers for centuries to determine the students' level of understanding (Georgieva, 2019; Mutlu, 2020; Saptono et al., 2021). It has been widely used to check if students have learned the lesson before the teacher can proceed to the next topic or re-teach the lesson until the class proficiency level (CPL) is at 75% or above (Cherng & Davis, 2019; Nurtanto et al., 2020; Ulfah et al., 2020). The goal of every formative assessment is to monitor student learning to provide on-going feedback that can be used by teachers to improve their teaching and by students to improve their learning and contribute meaningfully to their scores on summative assessments (Andersson & Palm, 2018; Hughes et

al., 2020; Wang & Tahir, 2020). Moreover, formative assessments help students identify their strengths and weaknesses and target areas that need work; help faculty recognizes where students are struggling and address problems immediately (Maier et al., 2016; Wongwatkit et al., 2016; Yüksel & Gündüz, 2017).

In the Philippines, the commonly used formative assessment is the daily quiz which poses many advantages to increase the proficiency level of the class and measure students cognitively (Black & Wiliam, 2018; Wongwatkit et al., 2016). Over the course of teaching, the researcher found that at some point *daily quiz* cannot guarantee an improvement to students' level of understanding due to the following reasons (this is mainly based from the observation of the researcher's classes) (Maier et al., 2016; Schildkamp et al., 2020; Shafi et al., 2019). Students would just tend to memorize the terms without actually understanding the heart of the lesson for the sake of passing the quiz; answers can be easily copied from their seatmates and apparently daily quiz measure only the cognitive ability of the students (Aji & Hartono, 2019; Menéndez et al., 2019; Schneider & Bodensohn, 2017). Based on the Mean Percentage Score (MPS) of the students in Kabunga-an Integrated School there is a fluctuating result of their scores may be due to different factors that affect the learning ability of the students. One factor that the researcher is looking into is the formative assessment that is being employed to the students which he believed is directly linked to the summative assessment where MPS is taken.

Schools and teachers are pressured to improve the test results of the students not minding or have overlooked the importance of the affective domain in learning (Kirichenko & Van Zanten, 2015; Nyoman Sukajaya et al., 2015). Affective domain is one of the domains of learning that Bloom's taxonomy has identified; it includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes (Bagon et al., 2018; Casey & Fernandez-rio, 2019). If we could only integrate this value through reflection which is widely recognized as an important element of adult learning style that is based on constructivism, transformational learning can take place (Bali & Musrifah, 2020; Schneider & Bodensohn, 2017). The challenge now is on how to administer a formative assessment measuring not only the cognitive abilities of the students but also their affective outcomes.

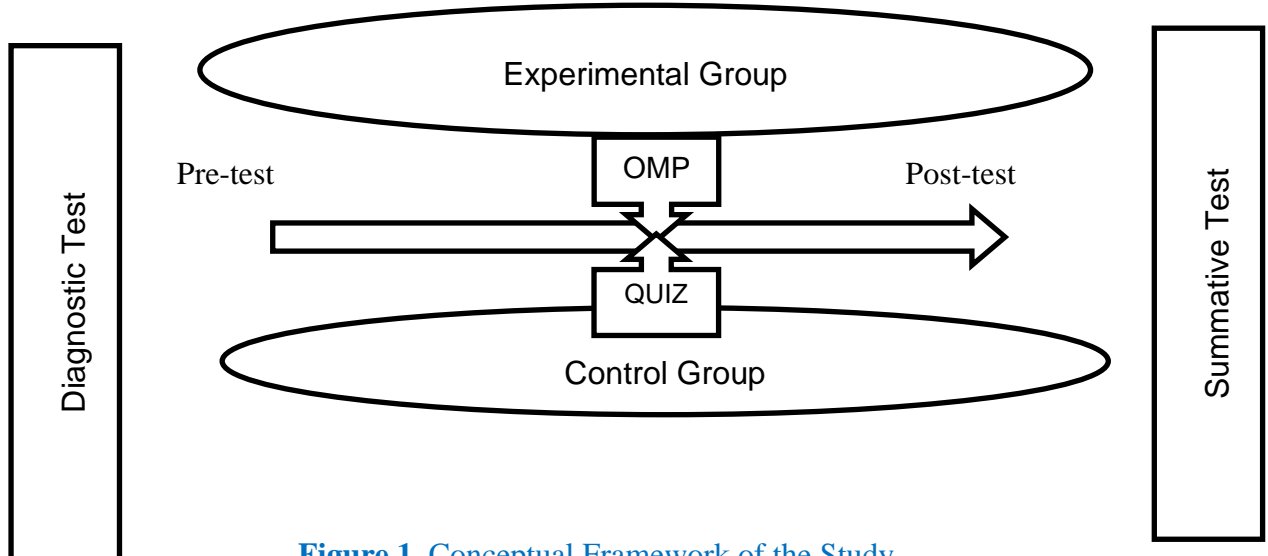
One type of a formative classroom assessment technique which has become aligned with the philosophy of continuous quality improvement which is the "one-minute paper" or OMP. OPM is a valuable tool, not only to engage students and provide the teacher with early feedback on classroom learning, but also to provide the teacher with an insight into the perceived effectiveness of their teaching practices (Kwan, 2011; Stead, 2005). One-minute paper has won the hearts of many faculty members across the world; a simple yet very effective tool to collect and assess the written feedback on student learning (Anderson & Burns, 2013; Whittard, 2015). Despite its simplicity, OMP assesses more than a mere recall. To select the most important or significant information, students must first evaluate what they recall. Then to come with a question, students must self-assess by asking themselves how well they understand what they have heard or studied (Angelo and Cross) (Ashakiran & Deepthi, 2013; Whittard et al., 2022). Prior researches have suggested that there a lot of potential benefits with a limited cost upon using the OMP, yet this assessment tool has not been used in the classroom. The reasons suggested that the researcher has limited knowledge about the assessment tool, uncommonly used and doubted its benefits and is very apprehensive of its costs.

There are some previous researches related to OMP. One of the study conducted a study of 81 introductory managerial accountancy students is consistent with that result in that the authors found a significant (and increasing) advantage for OMP users in tests which included some subjective elements (Chiou et al., 2014). Conversely, other previous research

found data on 571 first-year economics students taking multiple-choice tests indicated that the impact of the OMP, *ceteris paribus*, was to increase a student’s performance by a statistically significant 6.6 percent relative to the mean test score (Vera, 2022). It, therefore, appears that the OMP can enhance test performance even when the assessment is comprised of entirely objective material. The conduct of this action research would analyse the effectiveness of one-minute paper as a formative assessment to the scores of the ninth grade students Academic Years 2017-2018 on their summative assessment. The researcher would like to alter the formative assessment commonly used to see if the intervention taken can yield significant results on the scores of the students on a summative assessment. The output of this action research may be utilized, modified or be subjected to further studies at the division level.

**2. METHODS**

Each formative assessment was administered for five days in two weeks. It was done alternately with each group. The lesson covered the first learning outcome in preparing appetizer – *Perform Mise en Place*. Each class discussion lasted for one hour for both groups. Just like a normal teaching for a traditional way, the discussion was done by the teacher; five minutes before the end of the class the intervention (OMP) was given to the respondents as their formative assessment, so as with the controlled group with a quiz. Feedback giving was done with the experimental group, as part of the intervention, taken from their answers on the OMP five minutes before the start of the next class. Figure 1 shows the Conceptual Framework of the Study.



**Figure 1. Conceptual Framework of the Study**

This action research study employed a quasi-experimental pretest-posttest comparison group design (Miller et al., 2020; Thyer, 2012). The research variables and data collected. The independent variable consisted of the type of formative assessment to which students were exposed and was characterized by two levels: 1) daily quiz and 2) one-minute paper. The control group used the traditional way of formative assessment – the quiz. Furthermore, summative test assessment was developed by the teacher which was administered before (pre-test) and after (post-test) the intervention has been undertaken. It is show in Table 1.

This action research study was conducted to the Grade 9 section Sapphire students of Kabunga-an Integrated School with a population of 28 students. All respondents came from the remote areas of Baybay City; 80% came from Brgy. Kabunga-an and 20% came from

Brgy. Monterico. Due to its location, internet accessibility is poor thus impair and lessen their learning sources. Teachers opted to teach them the traditional way of teaching – teacher-centered approach. There were 14 respondents who belonged to each group – control, and experimental group. They were grouped according to their intellectual capacity based on their previous grades last school year 2016-2017. Two sources of data were collected for this study: a multiple-choice test assessment and an open-ended questions formative assessment. Respondents of both groups were given the multiple-choice test (see Appendix A) pretest and posttest. An open-ended questionnaire was administered to the intervention group (see Appendix B). The open-ended questions were analyzed by the teacher for the feedback giving at their next class meeting. A t-test: two-sample assuming unequal variance was used to determine the difference in the mean gain scores.

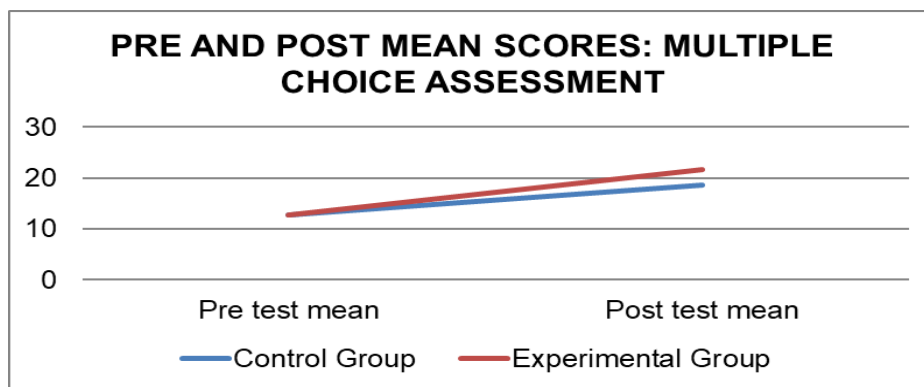
**Table 1. Variables and Data Sources**

<b>Independent Variable: Type of Formative Assessment</b>		
	<b>Control Group</b>	<b>Experimental Group</b>
Dependent Variable:	1. Multiple Choice Formative Assessment	1. Open-Ended Questions Formative Assessment
Summative Assessment	2. Multiple Choice Summative Assessment	2. Multiple Choice Summative Assessment

### 3. RESULTS AND DISCUSSION

#### Results

The result from the performance of two groups in diagnostic test showed that experimental group with 14 respondents (n = 14) has demonstrated a mean score of 12.79 and the control group with 14 respondents (n = 14) has also demonstrated a mean score of 12.79 which means that both groups are evenly distributed. While, the result from the performance of two groups in summative test experimental group demonstrated a mean score of 21.71 while control group demonstrated a mean score of 18.64 which means the *main gain* of two groups is nine (9) and six (6), respectively. Thus, the result of pre- and posttest of the two groups were compared in Figure 2.



**Figure 2. Pre and Post Assessment Mean Scores**

A t-test of two-sample assuming unequal variances revealed that the experimental group gained (M = 9, SD = 5.61) and the control group gained (M = 6, SD = 5.27) with observed values of  $t = -0.431$ ,  $p = 2.056$ . A two-tailed test for determining the rejection regions at 5 percent level of significance which come as under, using the table of t-distribution for 26 degrees of freedom. The observed value of  $t$  is  $-0.431$  which falls in the

accepted region and thus, we accept  $H_0$  and conclude that the difference in scores in two formative assessments is insignificant at 5 percents level of significance. The result of T-test is show in Table 2.

**Table 2.** T-test: Two-Sample Assuming Unequal Variances

	df	Level of Significance	Critical value of <i>t</i> -Distribution	<i>t</i> value
Pre/Post Assessment	26	0.05	2.056	-0.431

Base Table 2 multiple Choice assessment: t-value < 2.056 indicates not statistically significant. When computing for the Mean Percentage Score (MPS) of the students it shows that the experimental group has a higher score than that of the control group’s score is show in Table 3.

**Table 3.** Mean Percentage Score (MPS) of the Students

Variables	Mean Percentage Score	
	Pre-test	Post-test
Control Group	36.53%	53.27%
Experimental Group	36.53%	62.04%

**Discussion**

The study was conducted in Kabunga-an Integrated School, Barangay Kabunga-an, Baybay City, Leyte from July 2017 – December 2017 to determine the effectiveness of one-minute paper as a formative assessment to the scores of Grade students to their summative test. In this study, each formative assessment was given for five days in two weeks. It was done alternately with each group. The lesson covers the first learning outcomes in preparing appetizers – Perform Mise en Place. Feedback was given to the experimental group, as part of the intervention, which was taken from their answers to the OMP five minutes before the start of the next class. This action research studied the performance of the students on different formative assessment method which is the quiz and one-minute paper. It was revealed that the two formative assessment methods are both effective in increasing the scores of the students on a summative test. Both methods fall on the accepted region but it was found out that the one-minute paper which was administered on the experimental group is more effective than the quiz which was administered on the control group due to its higher mean. With regard to the MPS, the experimental group has a higher score of 62% compared to 53% of the control group. Thus, one-minute paper (OMP) is the best method to be administered during a formative assessment.

The use of OMP as a formative assessment poses many advantages and disadvantages to for teachers it provides immediate feedback about students’ performances cognitively and affectively which can be addressed quickly to students. It would take some time to read and analyse students’ responses for feedback giving. It also entails time to respond to students’ inquiries because questions might lead to further questions so set limits for feedback giving. Students’ inappropriate responses can be quite frustrating. For students with low self-confidence and have difficulties in expressing their ideas in English were able to ask questions and clarify things thereby considering students’ diversity. It encourages for active engagement and listening during class discussion to answer questions imposed in OMP. It clarifies misunderstanding about the lesson. Questions may be ambiguous to students and are difficult to answer in short span of time. If poorly overused, students would see this as a



“gimmick” rather than a solicitation of their learning. Disappointment may occur if questions weren’t answered by the teacher.

It is in line with previous study which explains the benefits of one minute paper (OMP) (Stead, 2005). The results found that both students and teachers seemed sizable for a modest amount of time and effort, and students generally perceived the one-minute paper well. However, one-minute papers can easily be overused, reflected in rapidly declining response rates over the course of the two lecture series. The other study found that perception of teacher-student about OMP is one of the most effective tools for encouraging engagement (Lucas, 2010). However, some teachers find it difficult to initiate contact in a seemingly natural way. The benefits of OMP enable teachers to measure and deal with student misunderstandings effectively, and at the same time, can help teachers to establish contact with students in large classes or with more reserved students and even help teachers who are uncertain to establish contact naturally.

There are still lots of things to consider when administering this type of formative assessment. Teachers who would like this formative assessment to be implemented in the teaching-learning process should have ample knowledge about the assessment and the result of this action research can be a basis and a guide to anticipate future problems. This research is still limited because it only analyses the formative assessment one-minute paper (OMP) using an experimental pre/post-test design. It is hoped that further research will be able to deepen it by considering other factors in the application of formative assessment one-minute paper (OMP) in learning.

#### 4. CONCLUSION

The aims of this study is to analyse the effectiveness of a One-Minute Paper (OMP) as a formative assessment contribute meaningfully to increasing the scores of ninth grade Sapphire students on their summative assessment. The result of study show a comparison group with fourteen students who were classified as control group had done the traditional way of formative assessment – the quiz. Both groups fall in the accepted region at 5% level of significance with mean gains of 9 and 6, respectively. It was revealed that the two methods were effective in increasing the scores of the students due to their higher mean scores. However, the experimental group’s mean gain score and mean percentage score (MPS) were significantly higher than the comparison group; thus, one-minute paper is more effective than quiz as a formative assessment.

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