

# Effect of No-Zero Grading Policy on Achievement, Self-Efficacy and Attitude towards Physics in Secondary Schools in Benue North-East Senatorial District, Benue State

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## ABSTRACT

In recent years, the debate surrounding grading policies in secondary education has gained substantial momentum, as educators and researchers explore innovative approaches to foster student learning, motivation, and overall academic success. One of the noteworthy evolutions in this discourse is the adoption of a “No-Zero Grading Policy” in various educational settings. The study investigated the effect of No-Zero Grading Policy on students’ achievement, self-efficacy and attitudes towards Physics in secondary schools in Benue North-East Senatorial District, Benue State, Nigeria. Three specific objectives with corresponding research questions guided the study and three hypotheses were formulated and tested at 0.05 level of significance. The study adopted a pretest post-test control group design. The population for this study was 14,822 Senior Secondary Two Students (SS II) in the 119 public secondary schools in Benue North-East Senatorial District of Benue State. The sample size for the study was 216 Senior Secondary Two (SSII) Physics Students in four schools. The sample size was selected using simple random and purposive sampling techniques. Three instruments, namely, Physics Achievement Test (PAT), Physics Self-Efficacy Questionnaire (PSEQ) and Physics Attitude Scale (PAS) were used for data collection. The instruments were validated by experts and the reliability was established using Kuder-Richardson Formular ( $KR_{20}$ ) and Cronbch Alpha method. Reliability coefficients of 0.86, 0.77 and 0.72 for PAT, PAEQ and PAS were obtained. Data collected were analyzed using Means and Standard Deviation to answer the research questions and Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. Findings of the study revealed that the mean achievement scores of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy significantly differ in favor of the experimental group. The findings also revealed that the mean self-efficacy and attitude ratings of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy significantly differ in favour of the experimental group. The study concluded that making the No-Zero Grading an integral part of classroom formative assessment practice will not only improve students’ achievement in Physics but also their self-efficacy and attitudes towards the study of Physics. Recommendations were made that that for improved academic achievement in Physics, the No-Zero Grading Policy should be implemented in schools and Physics teachers should be encouraged to adopt the policy; the No-Zero Grading Policy should be implemented in schools for enhancing the self-efficacy level of students in Physics, reason being that the policy has raised confidence in students that they can do well in Physics and there is need for school administrators to stress the importance of No-Zero Grading policy particularly in formative assessment practice and continuously monitor its implementation among Physics classroom teachers in order to enhance students’ attitudes towards Physics.

**Keywords:** No-Zero Grading Policy, Achievement, Self-Efficacy and Attitudes

## INTRODUCTION

Physics is a fundamental subject in secondary education that plays a crucial role in developing students’

analytical and problem-solving skills. Physics is a core science subject taught in secondary schools in Nigeria. It is an integral part of the curriculum, aimed at providing students with a foundational understanding of the physical world, natural phenomena, and the principles that govern them. Physics has been of immense benefit to the development of the society as well as offering students the opportunity to think critically and reason analytically in order to acquire the spirit of enquiry. In view of the importance of Physics to technological and scientific development, it has been made a core science subject in Nigerian Secondary Schools.

Despite the importance and emphases placed on the study of Physics, the rapid shortfall in the performance of students in Physics at the secondary school and in the number of applicants wishing to study Physics at tertiary level of education is highly disturbing. Characteristically, statistics reported by the examination bodies of West African Examination Council (WAEC) and National Examination Council (NECO) each time the results of the examinations are released points out to the fact that students have not been performing to the required standard in Science related subjects in which Physics is inclusive. As documented in the Chief Examiners' report of West Africa Senior Secondary School Certificate Examination, (WASSCE), students perform poorly in Physics (WAEC, Chief examiner's report, 2008-2019). As contained in the report, the average performance of students in Physics between the years is 44.71%. This report suggests that the performances of secondary school students in Physics examinations over the years have not risen considerably and has generated so much concern that one begins to question whether there is any achievement being made by teachers and students in secondary schools.

In secondary schools, it is of concern, especially in Nigeria that a good percentage of students who consider themselves as 'able' and so enroll for the subject (Physics) do not record impressive outcomes (Author & Omeodu, 2016). As a former Physics student and an instructor of Physics, it is a known fact that students bring to the classroom, a pre-conceived set of ideas not only about Physics, but also about their own abilities to do well in a Physics classroom. This means that an indicator of students' achievement can be suggested to occur in affective states. Prominent among affective states or characteristics that could affect students' achievement in Physics are self-efficacy and attitude.

Self-efficacy is seen as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. To Shaw (2015), it refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. In this study, it represents students' belief/ability that they can study, have success in and perform certain tasks in Physics. By determining the beliefs a student holds regarding their ability to study a subject like Physics, self-efficacy strongly influences both the abilities to do certain task in Physics competently and the choices the student is most likely to make. Self efficacy has consistently been found to be a good predictor of academic achievement (Ali, Karim, Mitra & Nasrin, 2020). In a subject like Physics which is often regarded by many students as a difficult subject, students with high self-efficacy would tend to fare or perform better than those with low self-efficacy. The students with high levels of self-efficacy in Physics could attribute their failures to lower attempts rather than lower ability, while those with low self-efficacy could attribute their failure to their low abilities. In other words, students with low self-efficacy are more likely to be afraid of doing their Physics tasks, avoiding, postponing, and giving up easily. While relatively widely studied as a factor influencing students' achievement in Science subjects, self-efficacy has not received much attention in Physics.

Attitude is another affective characteristic that could influence students' achievement in Physics. Fasakin (2011) recognized attitude as a mental and natural state of readiness, organized through experiences exerting a directive influence upon the individual's responses to all objects and situation with which it is related. Attitude towards Physics can be defined as "positive/favourable or negative/unfavourable feelings about Physics as a school subject. Positive attitude stimulates students to put more effort and leads to high achievement in a subject while negative attitude makes learning more difficult. Most students tend to have

negative attitude towards Physics presumably because they dislike the subject; do not obtain high marks in examination even though they have tried their best; cramped syllabus content and also do not like Physics teachers. Teachers often attribute student's low achievement in Physics to negative attitude. This negative attitude is due to the preconceived idea that Physics is the most challenging area of learning within the field of Science (Ibrahim, Zakiang & Damio. 2019). Thus, attitude as an emotional disposition is one of the most pivotal determinants of students' achievement in Physics as a student is likely to achieve better in a subject that he/she enjoys, has confidence in or finds useful.

In Physics classrooms, ascertaining whether students have achieved high or not, is done through assessment of their learning process. Assessment helps to provide feedback on the effectiveness of instruction and gives students a measure of their progress. In Secondary School Physics classroom, teachers often employ the use of assessment to measure students' improvement over time, motivating the students to study Physics, evaluating their teaching methods and ranking the student's capabilities in relation to other students among others. One significant aspect of this endeavor is the assessment and grading practices employed in secondary schools. Grades have traditionally been used as a record of students' ability, achievement, or progress by classroom teachers. Guskey (2014) states the reason behind the use of grade is to communicate information about student's achievement in school to parents and others, provide information to students for self-evaluation, select, identify, or group students for certain educational paths or programs, provide incentives for students to learn and provide evidence of students lack of effort or inappropriate responsibility. Students that receive low number grades are considered "low achievers" while those that receive high number grades are "high achievers". With this, students often see grades as a motivational factor and do much to keep away from receiving poor grades. Most students view high grades as positive recognition of their success, and some work hard to avoid the consequences of low grades (Guskey, 2011). Typically in classroom situation, if a student turns in an assignment or class work especially one that shows that they have put in some efforts, teachers choose to give the student a number grade, certainly not a zero. A zero, on the other hand, reflects that a student hasn't put in any effort at all. Tsou (2013) sees a 'zero grade' as the practice of giving students a zero on incomplete/ poorly done assignments/tests and factoring the zero or zeros into the student's final grade. Grades therefore, have become a ritual of the educational process that most students, parents, teachers, and administrators have come to expect as a measuring stick of progress and achievement.

Over the years, classroom assessment practices with regards to grading have become an ongoing controversial topic among educators /teachers worldwide particularly with the use of zeros in representing students' achievement. Teachers however believe that "the grade a student gets is the grade he/she has earned" meaning that teachers do not give grades, students earn grades. This phrase in some form or another has been uttered by millions of teachers around the world. However, cognizance of the secondary and affective aspects of assigned grades on student's confidence, self-efficacy, and motivation, increasing numbers of schools around the world have been experimenting with modified grading practices (Carifio & Carey, 2010). The schools are adopting grading practices that make it more difficult for students to flunk classes; that give students opportunities to retake examinations or turn in late work, and that discourage or prohibit teachers from giving out zeros. Many school districts around the world particularly in developed countries like Russia, United States of America, Germany, Canada, Mexico and Malaysia among others have instituted and adopted the use of "No-Zero Grading Policy" as an effort to change the traditional approach to grading (assigning Zeros), and the nature of academic appraisal of student development.

The No-Zero Grading Policy (NZGP) is a policy that prohibits teachers from giving students a zero on missed/poorly done assignments and tests. The theory behind the no-zero policy is that students should be given every opportunity to complete work in order to allow them the best chance to succeed and move on to the next level of their education (Tsou, 2013). The policy works like this: If a student has completed an assignment, no matter how late or poorly done – he has shown a "good faith" effort, and therefore deserves

at least a score of 50, just for their effort (Walker, 2016). This policy means that if a student fails a test or turn in his homework late, the lowest grade that he could get would be 50 (or depending on the school policy for a grade to be given but certainly not a zero) thereby mitigating the statistical weight of a zero. This grading policy to Balingit and Saint George (2016) is intended to give students a chance to recover even if they fail an assignment or a grading period. The authors consider a score of Zero to be mathematically unjust, in any case: a student who earns a zero and then a perfect score on the following assignment has an average of 50 percent which is still failure in most grading systems. Many believe that giving a student a score of zero rather than, say, a score of 50 on even just one bad assignment can doom students because climbing back to a passing grade can seem almost mathematically impossible and such failures can put students on a path to dropping out of school.

For many in favour of a no-zero grading policy, it comes down to equity. Many educators argue that factors that are beyond students' control such as homelessness, unstable home life and learning disabilities sometimes create barriers to students' learning and that low grades encourage struggling students to give up, and also that teachers who cannot get their students to comply use grades to punish rather than to assess knowledge. Proponents of no-zero grading policy argue that assigning zeros is not an effective response to poor academic performance or misbehaviour. Guskey (2014) states that low grades like zero are more likely to discourage students and lead to their withdrawal than encourage them to make greater efforts. Educators in support of this policy consider it to be fairer to students and end up being more conducive to learning, encouraging students to catch up when they fall behind rather than just giving up. A study conducted by Carifio and Carey (2013) to investigate the effect of No Zero Policy on students performance found out that students were performing higher on assessments when this policy was being used because it gave the students the sense they understood the material instead of students' feeling as though they were failures. However, studies by Balingit and Saint George (2016) and Dennis (2018) reported that in some schools where No-Zero Policy is implemented, teachers reported that students only do a minimum amount of work required to pass a class; students do not care if they fall behind in their course work and that students who had attended schools with No-Zero Policy earned lower high school core course grades compared to those who attended schools where this policy was not used. It is therefore suffice to state that this policy have stirred debates about the purpose of issuing academic grades and whether they should be used to punish, motivate or purely represent what students have learned in class.

Although a growing number of schools around the world particularly in developed countries have implemented this new grading system that bans teachers from awarding zeros to students, many educators are critical of the shift. In countries where this policy is implemented among school districts, it become a subject of much discussion among consultants, school and district administrators, parents, and other stakeholders whether it should continue or not. Despite the interest that this subject garners in the education sector and particularly assessment practices around the world, it has not been adopted or implemented in developing countries like Nigeria. In the Nigerian educational sector, zero grades are seen as fair practice as many educators believe that this traditional grading system of assigning zeros provide an accurate measurement of students and hold students accountable for what they do.

There can be no doubt that schools have a duty to use all effective means to improve students' achievement and attitudes towards school subjects (Physics inclusive). From literature available to the researchers, there are no traces that schools within Nigeria have started adopting or experimenting the No Zero Grading Policy but rather rely on the Zero Grading Policy. From the researchers' experience as a Physics teacher with the use of Zero Policy over the years, some students did give up in Physics classes after continuously receiving zeros and find it difficult to cope up in the subject. The researchers often observe that many students get more and more frustrated, less motivated and more detached, because they feel even if they wanted to learn everything they could, things get in their way that they have no control over. Most of the students after enrolling in for Science class where Physics is taught seem to regret their decision when achieving low

grades. The researchers observed also that most of the students that considered themselves as “able” and can study Physics seem to lower their self-efficacy and exhibit negative attitude towards Physics. With this observed scenarios, giving out zero grades to these students for works turned in late or poorly done seem to discourage them from continuing with learning. Also, stigma and societal discrimination particularly in the Nigerian context among students that obtain zero grades and perform poorly in schools seem to be a major barrier to students’ learning. This could be why Guskey (2014) states that “if the grade is to represent how well students have mastered established learning standards, or achieved specified learning goals, then the practice of assigning zeros clearly misses the mark. It is also the researchers’ observation that some students, instead of working harder, the vast majority of them who score low or gets a zero on tests/ assignments tend to withdraw, try less, and come to school less because they are taking a zero for what it actually stands for “failure”. They interpret ‘zero’ as “you do not belong in this environment”. If this is actually so, it refutes the argument by teachers that zeros makes students work harder and create greater accountability.

In spite of the usefulness this policy has proven in classrooms in developed countries where it has been adopted, its effectiveness has not been experimented in Nigerian schools and particularly in Science subjects like Physics where students’ achievement, self-efficacy and attitudes have been consistently not encouraging. It is based on this note that this study sought to investigate the effect of No-Zero Grading Policy on students’ achievement, self-efficacy and attitudes towards Physics in secondary schools in Benue North-East Senatorial District, Benue State, Nigeria.

## REVIEW OF RELATED STUDIES

A number of studies have thrown light in the effort to understand the effect of no zero grading policy in schools and also the achievement, self-efficacy and attitude towards Physics among students. Kane (2013) carried out a research on a local high school who had implemented a No-Zero Grading Policy and reported that the policy was found a good idea by school administrators because it improved students’ achievement. Long (2017) investigated the impact of minimum grading (No-Zero Grading) in southern Nevada high school, United States of America and found a positive impact of minimum grading on academic achievement in a low-achieving school in Southern Nevada and that administrators had generally positive perceptions of the minimum grading. It was also reported that students generally had negative perceptions on how minimum grading impacts academics and culture and that the students felt that minimum grading is not fair and allows for students to graduate with a little effort and little knowledge. Long’s (2017) study concluded that minimum grading can have a positive effect on a school grades, even if teachers and students believe otherwise and this confirms the finding of the present study. Dennis (2018) investigated “No-Zero Policy in Middle School (NZPMS): A Comparison of High School Student Achievement in Minneapolis, Minnesota, USA”. The study found that there is a negative impact on students’ achievement when using the No-Zero Policy in middle school grading and that high school students perform at a lower level who had a No-Zero Policy than those who did not. Students who had attended schools with the No-Zero Policy according to Dennis’ (2018) findings, earned lower high school core course grades in Mathematics, Science, and English than students who had attended schools with Fail Policy. Further, Olmos (2018) studied the impact of teacher grading scales and grading practices on students’ performance and motivation and reported that although teachers implemented grading scales and grading practices that they believed would be related to the reduction of failure rates, there was no significant change to students’ overall academic performance. The study also found that rather than being motivated to work harder, students responded with less effort when they saw that it was easier to receive a passing grade through the new grading scales. Krawczyk (2017) investigated the effects of grading on student learning and alternative assessment strategies and reported no direct correlation with an increase or decrease in daily students’ engagement with learning activities after exposure to alternative grading practice. The study also found that alternative assessment strategy had several positive outcomes, students regularly reflected on their own learning in a

more meaningful way; they connected their work and understanding with their final grades with increased clarity and some students found that the assessment strategy reduced overall stress.

## Research Questions

The following research questions were raised to guide the study:

1. What is the mean achievement scores of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?
2. What is the mean self-efficacy rating of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?
3. What is the mean attitude rating of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?

## Statement of Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

1. The mean achievement scores of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ
2. The mean self-efficacy ratings of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ
3. The mean attitude ratings of secondary school students in Physics when exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ

## METHODOLOGY

The study employed a quasi-experimental design with particular reference to pretest, post-test control group design. The population for this study comprises 14,822 Senior Secondary Two Students (SS II) in the 119 public secondary schools in Benue North-East Senatorial District of Benue State. The sample size for the study was 216 Senior Secondary Two (SSII) Physics Students in four public secondary schools in Benue North-East Senatorial District of Benue State, Nigeria. This sample size represented the number of Science students found in intact classes of the selected schools. In arriving at the sample size, simple random and purposive sampling techniques were adopted in selecting the schools.

Three adapted instruments, namely, Physics Achievement Test (PAT), Physics Self-Efficacy Questionnaire (PSEQ) and Physics Attitude Scale (PAS) were used for data collection. The PAT is a 40 item achievement test adapted from WAEC and NECO based on the Physics topics the students were exposed to in the course of the study. The instrument has four (4) response options lettered A – D. For each item, three of the response options were distracters and one is the Key. The PSEQ is a questionnaire adapted from Lindstrøm and Sharma (2011). The questionnaire has a total of 10 items with response options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The PAS is a structured scale adapted from Kaur and Zhao (2017). The PAS has a total of 26 grouped four domains (factors) that measure attitude towards Physics. These domains or factors are enthusiasm for Physics, Physics learning, Physics teacher and Physics as a future vocation. Items 1-7 measures enthusiasm for Physics; items 8-14 are on Physics learning; items 14-21 are on Physics teacher and items 22-26 are on Physics as a future vocation. The response options for

the PAS were Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). To establish the reliability of the instruments, data collected from trial test were subjected to reliability analysis. Kuder-Richardson ( $K-R_{21}$ ) method was used to establish the reliability index for the PAT while Cronbach Alpha Method was used to establish the internal consistency of the items of the PSEQ and PAS. The analysis yielded coefficients of 0.86, 0.77 and 0.72 for PAT, PSEQ and PAS respectively.

Data collection for the study involved collaboration with Physics Teachers from the selected schools. The researchers introduced the concept of the No-Zero grading policy to these teachers and provided them with structured lesson plans on specific physics topics, including Scalars and Vectors, Motion, Projectiles, and Equilibrium of Forces. Subsequently, only teachers in the selected schools assigned as experimental groups were instructed to implement the No-Zero grading policy as part of their formative assessment strategy for students. Before the teachers' interaction with the students for the commencement of this experiment, PAT, PSEQ and PAS were administered to the students as pretests to know their entry achievement in Physics, self-efficacy and attitude towards Physics. After ascertaining the students' entry achievement scores, self-efficacy and attitude ratings, both students in the experimental and control group were exposed to the first topic (Scalars and Vectors) by the Physics classroom teachers using the lesson plan designed by the researcher. At the end of each lesson, the students were given class-works and assignments by their teachers.

For the experimental group, the scoring guide was thus:

1. The lowest score for the test was half of the overall or total score for the test (). Hence, half of the overall score was awarded to students who fail the class work and assignments completely (A zero score was prohibited);
2. Students who got some items or questions correctly were awarded a score above half of the overall score (for a total score of 10, the half mark is 5 and likewise, for a total score of 20, the half mark is 10) and
3. Students who got all items or questions correctly were awarded the overall score

For the control group, the scoring was based on traditional scoring guide which allows teachers to:

1. Award a score of zero for poorly completed works. Here, students who fail the assessments (class-work and assignments) were awarded a score of zero.
2. Award a mark or marks based on the teachers' judgment of students who correctly answers some questions. (This was done using a marking scheme)
3. Award full marks (overall score) to students who correctly answers all items

The teachers thereafter exposed the students to the remaining topics of interest (Motion, Projectiles and Equilibrium of Forces) based on the lesson plans. For these lessons, series of class-works and assignments were given to the students. The teachers marked and returned the scripts and books to the students following the scoring guide. This process took six weeks of the term. At the end of the whole course of instruction, posttests (PAT, PSEQ and PAS) were administered to both the experimental and the control groups. The resultant students' achievement scores, mean self-efficacy and attitude ratings obtained from this administration was compared to the pretest achievement scores, mean self-efficacy and attitude rating respectively so as to ascertain the effect of the of No-Zero Grading Policy on students' Physics achievement, self-efficacy and attitudes towards Physics. Data collected for the study were analyzed using descriptive statistics of Means and Standard Deviations to answer the research questions and an inferential statistic of Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

## RESULTS

Research question 1: What is the mean achievement scores of secondary school students in Physics

exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?

Table 1: Mean and Standard Deviation of Achievement Scores of Secondary School Students in Physics Exposed to No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Groups	N	Pretest		Posttest		Mean Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Control Group (Zero Grading)	114	14.55	4.48	19.76	5.47	5.21
Experimental Group (No Zero Grading)	102	13.79	3.82	21.21	5.38	7.42

Table 1 shows that the mean pretest and posttest difference in the achievement scores of students in the control group (Zero Grading Policy) is 5.21 while that of those in the experimental group (No-Zero Grading Policy) is 7.42. This means that students exposed to the No-Zero Grading policy performed better than those exposed to the Zero Grading.

**Research question 2:** What is the mean self-efficacy rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?

Table 2: Mean and Standard Deviation of Self-Efficacy Rating of Secondary School Students in Physics Exposed to No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Groups	N	Pretest		Posttest		Mean Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Control Group (Zero Grading)	114	2.30	1.00	2.29	0.99	-0.01
Experimental Group (No Zero Grading)	102	2.28	0.98	2.80	0.96	0.52

Table 2 presents the data indicating that the difference between the mean pretest and posttest self-efficacy scores for students in the control group, where the Zero Grading Policy was implemented, is -0.01. In contrast, for students in the experimental group subjected to the No-Zero Grading Policy, the difference is 0.52. This suggests that students who were exposed to the No-Zero grading policy exhibited an improvement in their self-efficacy compared to those who were subjected to the traditional zero grading approach.

**Research question 3:** What is the mean attitude rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District, Benue State, Nigeria?

Table 3: Mean and Standard Deviation of Attitude Rating of Secondary School Students in Physics Exposed to No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Groups	N	Pretest		Posttest		Mean Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Control Group (Zero Grading)	114	2.33	0.99	2.33	0.99	0.00
Experimental Group (No Zero Grading)	102	2.30	1.00	2.89	0.96	0.59



Table 3 illustrates that when comparing the mean pretest and posttest differences in the attitude ratings of students, the control group (Zero Grading Policy) showed a negligible change of 0.00. In contrast, the experimental group (No-Zero Grading Policy) exhibited a noticeable improvement with a difference of 0.59.

This implies that students who were introduced to the No-Zero grading policy experienced a positive shift in their attitude towards the subject, while those under the traditional zero grading system did not show any significant change in their attitude.

**Hypothesis 1:** The mean achievement scores of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ

Table 4: ANCOVA between Achievement Scores of Secondary School Students Exposed No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Source	Type III Sum of Squares	Df	Mean Square	F	P value
Corrected Model	356.488 <sup>a</sup>	2	178.244	6.266	.002
Intercept	4872.994	1	4872.994	171.311	.000
Pretest	244.437	1	244.437	8.593	.004
Group	<b>143.009</b>	<b>1</b>	<b>143.009</b>	<b>5.028</b>	<b>.026</b>
Error	6058.845	213	28.445		
Total	96698.000	216			
Corrected Total	6415.333	215			

Df = Degree of Freedom; F = F-Ratio, P<0.05

The result on Table 4 shows that the achievement scores of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy significantly differ after controlling for pretest,  $F(1, 213) = 5.028$ ,  $P = .026$ , i.e statistical significance adjusted for covariate. This means that the null hypothesis is rejected

**Hypothesis 2:** The mean self-efficacy rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ

Table 5: ANCOVA between Self-Efficacy of Secondary School Students Exposed No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Source	Type III Sum of Squares	Df	Mean Square	F	P value
Corrected Model	13.991 <sup>a</sup>	2	6.996	636.000	.000
Intercept	2.831	1	2.831	257.364	.000
Pretest	4.974	1	4.974	452.182	.983
Group	<b>13.862</b>	<b>1</b>	<b>13.862</b>	<b>1260.182</b>	<b>.000</b>
Error	2.263	213	.011		
Total	1403.026	216			
Corrected Total	16.255	215			

Df = Degree of Freedom; F = F-Ratio,  $P < 0.05$

The result on Table 5 shows that the mean self-efficacy rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy significantly differ after controlling for pretest,  $F(1, 213) = 1260.182$ ,  $P = .000$ , i.e statistical significance adjusted for covariate. This means that the null hypothesis is rejected.

**Hypothesis 3:** The mean attitude rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District do not significantly differ

Table 6: ANCOVA between Attitude Ratings of Secondary School Students Exposed No-Zero Grading Policy and those Exposed to Zero-Grading Policy

Source	Type III Sum of Squares	Df	Mean Square	F	P value
Corrected Model	16.559 <sup>a</sup>	2	8.280	828.000	.000
Intercept	3.183	1	3.183	318.300	.000
Pretest	.020	1	.020	2.000	.168
Group	<b>15.683</b>	<b>1</b>	<b>15.683</b>	<b>1568.300</b>	<b>.000</b>
Error	2.192	213	.010		
Total	1475.133	216			
Corrected Total	18.751	215			

Df = Degree of Freedom; F = F-Ratio,  $P < 0.05$

The result on Table 6 shows that the mean attitude rating of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy significantly differ after controlling for pretest,  $F(1, 213) = 1568.300$ ,  $P = .000$ , i.e statistical significance adjusted for covariate. This means that the null hypothesis is rejected.

## DISCUSSION

The first finding of the study revealed that the achievement scores of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District significantly differ after controlling for the effect of the pre-test. From this finding, students exposed to No-Zero Grading Policy achieved higher than those exposed to Zero Grading Policy. The findings corroborate with that of Kane (2013) who carried out a research on a local high school who had implemented a No-Zero Grading Policy and reported that the policy was found a good idea by school administrators because it improved students' achievement. The finding also corroborates with that of Long (2017) who investigated the impact of minimum grading (No-Zero Grading) in southern Nevada high school, United States of America and found a positive impact of minimum grading on academic achievement in a low-achieving school in Southern Nevada and that administrators had generally positive perceptions of the minimum grading. Long's (2017) study concluded that minimum grading can have a positive effect on a school grades, even if teachers and students believe otherwise and this confirms the finding of the present study. This finding, however, is not in tandem with that of Dennis (2018) who found that there is a negative impact on students' achievement when using the No-Zero Policy in middle school grading and that high school students perform at a lower level who had a No-Zero Policy than those who did not. Students who had attended schools with the No-Zero Policy according to Dennis' (2018) findings,

earned lower high school core course grades in Mathematics, Science, and English than students who had attended schools with Fail Policy and this is in contradiction with the findings of this study. The finding also disagree with that of Olmos (2018) whose study on the impact of teacher grading scales and grading practices on students' performance and motivation reported that although teachers implemented grading scales and grading practices that they believed would be related to the reduction of failure rates, there was no significant change to students' overall academic performance. In the present study, this policy is found to improve students' achievement in Physics. This improvement could be because, in schools where this policy was tested, students' prior achievement in Physics has been below average and by assigning 'false scores' to the students when they actually ought to have received a 'zero score' (failing grade) might have encouraged the struggling students not to give up and instilled in them a confidence that they can do well in Physics. Hence, this could be what actually made them to sit up for subsequent assessments in Physics and have led to the improved scores as observed in the study. It is generally assumed by some educators that giving very low grades—zeros, in some cases to students for works poorly done communicates to the students that they need to work harder to achieve high scores; however, that might not be the case in this study as the students' achievement have proved it otherwise.

The findings of the study also revealed that mean self-efficacy ratings of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District significantly differ after controlling for the effect of the pre-test. It was shown from the finding that students who were exposed to the No-Zero Grading Policy have more belief in their capacity or ability to learn Physics than students exposed to the Zero Grading Policy. This finding gives credence to the position of Guskey (2010), one of the proponents of No-Zero Grading Policy who states that low or zero grades are more likely to discourage students and lead to their withdrawal than encourage them to make greater efforts. The finding is at variance to that of Olmos (2018) who reported although teachers implemented grading scales and grading practices that they believed would be related to increase in students' engagement, there was a decrease in students' motivation when alternative grading practices were used on them. The present study in contradiction to this revealed that students' belief and confidence with regards to the study of Physics was enhanced after exposure to an alternative grading practice – the No-Zero Grading policy. The finding is also at variance with that of Krawczyk (2017) who found no direct correlation with an increase or decrease in daily students' engagement with learning activities after exposure to alternative grading practice. The point of variance here is that an increase in the self-efficacy level of students with respect to the study of Physics was observed in the present study. This finding as observed could be because the students used in this study has been consistently receiving failing grades (zero grade) from their teachers for poorly done works and the sudden change from the failing grade to a passing grade has built in the students a confidence that they can do well in Physics. As students from schools where performance in Physics has been below average, it could be that the practice of assigning zeros to the students for works poorly done has been ultimately defeating and inevitably contributes directly to the lower self-efficacy levels in Physics among the students.

Lastly, the finding of the study revealed that the mean attitude ratings of secondary school students in Physics exposed to No-Zero Grading Policy and those exposed to Zero-Grading Policy in Benue North-East Senatorial District significantly differ. This finding revealed that students exposed to the No-Zero Grading Policy were more favourably predisposed to the study of Physics than students exposed to the Zero Grading Policy. This finding uphold that of Krawczyk (2017) whose study on effects of grading on students' learning and alternative assessment strategies found that alternative assessment strategy had several positive outcomes, students regularly reflected on their own learning in a more meaningful way; they connected their work and understanding with their final grades with increased clarity and some students found that the assessment strategy reduced overall stress. The finding however negates the finding of Long (2017) who reported that students generally had negative perceptions on how minimum grading impacts academics and culture and that the students felt that minimum grading is not fair and allows for students to graduate with a

little effort and little knowledge. Further, the finding disagree with that of Olmos (2017) who found that rather than being motivated to work harder, students responded with less effort when they saw that it was easier to receive a passing grade through the new grading scales. In view of these, it could be suggested that the finding of the present study as observed could be because assigning a passing grade to students for poorly done works instead of a failing grade which has been the tradition has propelled the students to study Physics. This may be due that the students felt relieved from failing grades and comments and were been motivated with the 'false' scores awarded to them. With this practice of grading in the present study, the students might have seen themselves as ones who can do well in Physics thereby, erasing the consciousness in them that they are failures especially when they have consistently received a couple of zeros. Hence, the passing grades or scores given to them even when they fail in actual sense could be what have contributed to their enhanced attitudes towards the study of Physics.

## CONCLUSION

Based on the findings of the study, it was concluded that making the No-Zero Grading making an integral part of classroom formative assessment practice will not only improve students' achievement in Physics but also enhance their self-efficacy and attitudes towards the study of Physics. The policy motivates struggling students, boost their confidence, and encourage a more positive outlook on the subject. In a broader context, the policy is necessary within the school system and particularly in Physics classes as it propels students to a higher academic performance in the cognitive and affective aspects.

## RECOMMENDATIONS

Based on the result of the findings, the following recommendations are made:

1. For improved academic achievement in Physics, the No-Zero Grading Policy should be implemented in schools and Physics teachers should be encouraged to adopt the policy.
2. The No-Zero Grading Policy should be implemented in schools for enhancing the self-efficacy level of students in Physics. This is because this policy has raised confidence in students that they can do well in Physics.
3. There is need for school administrators to stress the importance of No-Zero Grading policy particularly in formative assessment practice and continuously monitor its implementation among Physics classroom teachers in order to enhance students' attitudes towards Physics.
4. For the implementation of No-Zero Grading Policy, school administrators should endeavour to organize workshops where resource persons, particularly, educational testing experts will be used as facilitators.

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