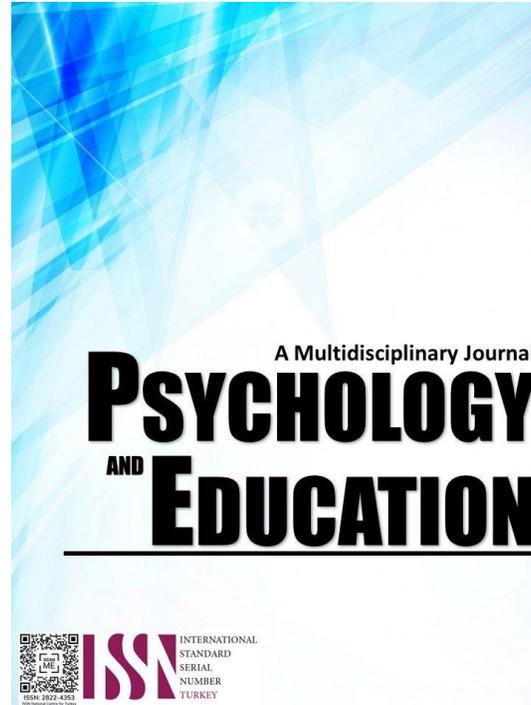


# INFERENCES OF ACHIEVEMENT: EFFECTS ON ACHIEVEMENT IN PHYSICAL SCIENCE



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## Inferences of Achievement: Effects on Achievement in Physical Science

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### Abstract

The study participants were grade 11 students of Penaranda National High School, Division of Nueva Ecija, during the second half of the school year 2023-2024. The research focused on student inferences of achievement in science along with self-reliance, capability, challenges, accountability, and teacher's dynamism. The following hypotheses were tested: Students across gender and strand do not differ in their inferences of achievements their achievement in science" and "No significant relationship exists between students' achievement and their inferences of achievement in science." The findings were that students' achievement in science ranged from 75-95, with a mean of 86.69. Most students have very high inferences of achievement on the measure of challenges, along with self-reliance, capability, accountability, and teacher dynamism. Male and female students do not differ in their inferences of achievement in their achievement in science; however, students across strands differ in their inferences of achievement in their achievement. Capability was the only measure observed to have a significant relationship with their performance in science.

**Keywords:** *achievement, inferences, performance, self-reliance, capability, challenges, accountability*

### Introduction

One crucial 21st-century competency is inference skill, which involves using available information or evidence, even when it is not directly stated, to logically deduce conclusions or make reasoned judgments. Inference skill enables individuals to draw meaningful insights from implicit data, fostering effective problem-solving and decision-making across various contexts (Teo & Goh, 2019). Nowadays, students encounter difficulties learning science concepts, solving word problems, and making assignments. These difficulties experienced by the learners must be considered to have meaningful learning.

Other factors contributing to learning are warm, caring, supportive student-teacher relationships and other child-adult relationships linked to better school performance and engagement, greater emotional regulation, social competence, and willingness to take on challenges (Osher et al., 2018). Strong relationships have biological as well as affective significance. Brain architecture is developed by warm, consistent, attuned relationships, positive experiences, and positive perceptions of these experiences (Center on the Developing Child, 2016). Such relationships help develop the emotional, social, behavioral, and cognitive competencies foundational to learning.

Most research papers found in the literature revealed that the student's factors that affect the student's academic performance are gender, high school grade, student's parental education, financial background, medium of teaching, student family status, living location, student's previous semester marks, seminar performance class, test grade, assignment performance, attendance in class and lab work, general proficiency, Interest in a particular course, Study behavior, Engage Time and Family Support for study, previous schools marks, admission type, accommodation type, parent's occupation, parent's qualification. These attributes are divided into personal, family, academic, institutional, and social categories. The student's most significant personal attributes are considered, such as gender, age, interest in the study, admission type, and study behavior. (Husaini et. al., 2023)

According to (Ariaso, 2020), the level of motivation affects students' learning when they are fully satisfied with the study; satisfaction is felt when they have learned the lesson, when the teacher appreciates what is being done in the discussion, if students are tempted to study through studious peers, when supervised by parents or siblings, studying to get high marks, for a better future and not wanting to fail to honor parents.

### Research Questions

The researcher looked into factors that students attribute to their achievement and correlated them with achievement in science. Specifically, the study was designed to arrive at answers to the following questions:

1. What are the students' achievements in science?
2. What are the students' inferences of their achievement arising from:
  - 2.1. teacher's dynamism;
  - 2.2. self-reliance;
  - 2.3. capability;
  - 2.4. challenges; and
  - 2.5. accountability?
3. Is there a significant difference between the inferences of achievement in their achievement in science when grouped across gender and strand?

4. Is there a significant relationship between students' performance in science and their inferences of achievement?
5. Is there a significant difference among the domains of the Grade 11 students' inferences of achievement in science?
6. Does student's performance influence their inferences of achievement in physical science?

## Literature Review

Lau and Ho (2020) reported that enjoyment of science learning, self-concept, and science activities significantly predict academic outcomes. However, instrumental motivation did not predict academic performance in science (Lau & Ho, 2020). It showed that one dimension of attitudes in science can predict academic outcomes instead of another.

The study states that attitudes toward science mediate the interrelationships between students' achievement and instructional factors (Liou, 2020). However, it is unknown if the attitudes toward science mediate the relationships between the frequency of practical work and science achievement in various cognitive domains. In the US, Long et al. (2022) showed that teacher-directed and inquiry-based teaching practices are significant predictors of enjoyment of science. Consequently, teacher-directed, inquiry-based, and enjoyment of science were the three variables that significantly predicted science achievement. Although the other two variables (i.e., teacher-directed and enjoyment of science) were positive predictors of science achievement, inquiry-based teaching practices were a negative predictor of science achievement (Long et al., 2022). Areepattamannil, Cairns, and Dickson (2020) demonstrated that teacher-directed science instruction was positively associated with a number of variables, which include, amongst others, instrumental motivation to acquire or learn science as well as enjoyment of science. They also revealed that inquiry-based science instruction was positively correlated with, amongst other variables, instrumental motivation to learn science and enjoyment of science. Hence, the present will focus on more than one attitude towards science.

According to Long, Gao, Yang, and Chen (2022), when examining factors contributing to scientific achievement, enjoyment has been taken to be in line with or a part of other variables such as motivation and self-concept.

Findings indicated that science self-efficacy, value in learning science, gender, and race were significant positive predictors of science achievement, while attitude was not a predictor. Male students showed higher science achievement, science self-efficacy, and science attitude than females. White and Asian students showed significantly higher science achievement, science self-efficacy, value in science learning, and science attitudes than Black and Hispanic students.

Based on the study of (De Vera et al. 2020), most Grade 11 STEM A expect to receive an A grade. It can be construed that if the way teachers teach is effective, the grades students would expect to receive are high since they are absorbing the information being taught to them as well. Their efforts paid off a pedagogy that needed improvement that could adversely impact the students, causing them to think independently about the subject and essentially self-teach.

The study (Derilo, 2019) revealed that the students have an average level of basic science process skills and a low level of integrated science process skills. A significant correlation was reported between students' science performance and basic SPS (Science Process Skills). On the other hand, students' integrated SPS was not significantly related to their performance. Furthermore, a highly significant, positive correlation existed between the students' overall science process skills and achievement.

The meta-analytic results revealed an overall positive and moderate relationship between attitude toward science and learning achievement in science ( $r = 0.248$ ,  $p < 0.001$ ). The results further found that this association was moderated by the type of attitude, and larger effect sizes were shown in self-efficacy than in interest, societal relevance of attitude toward science, and mixed attitude. Moreover, the effect sizes of studies with unstandardized measures to assess science achievement were larger than those with standardized measures. (Pei Pei Mao et al.)

Peñeda et al. (2019) identify the perceptions that affect the learners' academic performance. The study focused on the fifth graders in a laboratory school in Tacloban City, Leyte. Semi-structured guides or questionnaires were used in the study to explore the qualitative approach to student's academic performance. Six major themes were derived: Self-Driven Activities in Learning, Challenges in Learning, Styles in Learning, References used in Learning, Scaffolds in Learning, and Coping Mechanisms in Learning. Results revealed that individual learning leading to better academic performance is being achieved with the help of the people around. However, there are things to consider, such as classmates' behavior, teaching strategies, and parents' guidance, which are necessary to achieve positive outcomes relative to the pupils' academic performance.

## Methodology

### Research Design

The descriptive method of research is employed in this study. The checklist was the primary tool to gather data. The techniques of participant observations and non-structured interviews were utilized to validate findings. Descriptive studies proceed to describe specific observable facts. It is "fact-finding" or "information gathering" with analytical interpretations. The descriptive method explains a particular phenomenon. It is directed towards ascertaining the prevailing conditions about the existence of a phenomenon or condition (Wiersma, 2013)

## Respondents

The participants of the study were the grade 11 students of Penaranda National High School, Division of Nueva Ecija, during the second half of the school year 2023-2024.

## Instrument

The instrument used to gather data was adopted by Wendell (2010). It consisted of (5) parts: Part I focuses on teachers' dynamism, Part II on self-reliance, Part III on capability, Part IV on challenges, and Part V on accountability. Each part consists of five-item statements to draw information on students' inferences about their achievement in school endeavors. Respondents are informed that they may have experienced or observed the statements in their day-to-day interactions with their science subject.

Respondents are requested to encircle the number opposite each item to indicate the degree of their conformance or non-conformance by following the numerical guide below: 6 - I strongly agree; 5 - I agree; 4 - I slightly agree; 3 - I slightly disagree; 2 - I disagree; 1 - I disagree.

## Procedure

The Assistant School Principal sought permission to administer the checklist to the respondents. The checklist was personally administered to the students with the assistance of fellow teachers during their free time. The respondents were advised to answer as honestly all items and were told that it is not a test, nor results that affect their grades in science.

## Data Analysis

The frequency count, percentage distribution, and weighted mean were used to determine verbal item statement ratings. The analysis of variance was used to test the hypothesis: "Students across genders do not differ in their inferences of achievement in Science." The Pearson Product Moment Correlation is applied to test the hypothesis: "No significant relationship exists between students' achievement in science and their inferences on achievement." The repeated measures of ANOVA are applied to determine the reliability index of the items. Multiple linear regression is applied to determine which domains influence student achievement.

## Results and Discussion

### Students' Achievement in Science

Table 1. *Students' Performance in their Subject in Science*

<i>Distribution</i>	<i>Frequency</i>	<i>Percentage (%)</i>
95 - above	11	10.67
90 - 94	28	27.18
85 - 89	43	41.75
80 - 84	21	20.40
75 - 79	0	0.00
Total	103	100.00

*Mean: 86.69*

As shown in Table 1, students are diverse in their academic performance in science. The students' performance had a mean average of 86.69. Results disclosed that the student's achievement in science is high. A closer look at the table revealed a cumulative percentage of 79.60 students obtained grades in science ranging from 85 to 90 or above.

### Students' Inferences of Achievement in Science

Table 2. *Degree or Level of Students' Inferences of Achievement in Science, relative to Self-Reliance*

<i>Limits</i>	<i>Categories</i>	<i>f</i>	<i>%</i>	<i>Cum%</i>
30-26	Very high	31	30.11	30.11
25-21	High	56	54.40	84.51
20-15	Moderate	16	15.53	100.00
14-10	Low	0	0.00	0.00
9-5	Very low	0	0.00	0.00
Total		103	100.00	100.00

Table 2 shows that the majority of the students, 56 or 54.40 percent, are high in their inferences of achievement in science in terms of self-reliance. The result suggests that the students' discernment of their importance and value is lofty. Their science teachers in school extend recognition to them and consider them valuable.

Self-reliance of classmates and their teachers on whatever capabilities they have built on students' feelings of security, self-reliance, and self-worth. The students feel that their teachers in science are interested in their welfare and are taken seriously by their teachers.



Table 3. *Obtained Weighted Means and the Verbal Ratings of Item- Statements relative to Students’ Inferences of their Achievement in Self-reliance.*

<i>Self-reliance</i>	<i>WM</i>	<i>Interpretation</i>
They feel their science teachers are interested in my welfare.	5.19	strongly agree
They are taken seriously by their science teachers.	4.78	agree
They feel their science teachers consider them important.	4.92	agree
They are trusted by their science teachers and their classmates	4.97	agree
Science teachers and classmates have faith in their ability	4.75	agree
<b>Pooled Mean</b>	<b>4.92</b>	<b>agree</b>

*Legend:* 6.00- 5.16 strongly agree; 5.14- 4.32 agree; 4.31- 3.49 slightly agree; 3.48-2.66 slightly disagree; 2.65-1.83 disagree; 1.82- 1.0 strongly disagree

Table 3 shows that students strongly agree and feel their science teachers are interested in their welfare.

The students agree to the following: they are taken seriously by their teachers in science; their teacher considers them important in their class; their teachers and classmates trust them; and they have faith in their ability.

Students’ outlook disclosed that their teachers in science are interested in their welfare and are taken seriously by their teachers, which redounds feelings of belonging among the students. The more intense students feel that they are earnestly well thought-out by teachers, likewise, serve as a motivator towards achievement in school work. Self-reliance on classmates and their teachers, whatever capabilities they have, builds on students’ self-reliance, feelings of security, self-reliance, and self-worth.

Table 4. *Degree or Level of Students’ Inferences of Achievement in Science Relative to Capability*

<i>Limits</i>	<i>Categories</i>	<i>f</i>	<i>%</i>	<i>Cum%</i>
30-26	Very high	38	36.91	36.91
25-21	High	57	55.33	92.24
20-15	Moderate	8	7.76	100.00
14-10	Low	0	0.00	0.00
9-5	Very low	0	0.00	0.00
<b>Total</b>		<b>103</b>	<b>100.00</b>	<b>100.00</b>

As shown in Table 4, the majority of the students, 57 or 55.33 percent, are high in their inferences of achievement in science in terms of capability. The result implies that the majority of the students are favorable in their inferences of achievement in science in terms of capability. The students have a strong faith and self-reliance in their competencies and capabilities to perform and undertake responsibilities and other accountability in their science subjects.

Teachers should see learners feel excited and challenged by introducing new concepts and theories. Classroom activities introduced by teachers should take into consideration students’ diverse abilities, skills, and expertise. Students must be aware that their schoolwork success depends on their efforts.

Teaching requires the dynamism and ingenuity of teachers. They should see that learners feel excited and challenged by introducing new concepts and theories. Classroom activities introduced by teachers should take into consideration students’ diverse abilities, skills, and expertise. Students must be aware that their success in school work depends on their efforts.

Teaching requires the dynamism and ingenuity of teachers. They should be skilled in motivating students, seeing that the lesson is clear to everyone, and emphasizing their responsibilities, duties, and limitations to students. When effectively carried out by the teacher, all these spells students' interest, satisfaction, and fulfillment.

Table 5. *Obtained Weighed Means and the Verbal Ratings of Item Statements Relative to Students’ Inferences of their Achievement Science in Capability.*

<i>Capacity</i>	<i>WM</i>	<i>Interpretation</i>
They have skills in communicating in communicating their ideas.	5.05	agree
They feel nervous and tense when asked by their science teachers to recite.	4.65	agree
They find it difficult to review their science lessons. Even if they try their best to study the subject.	4.15	slightly agree
They like science as a subject	4.61	agree
Science as a subject challenges me a lot	5.05	agree
<b>Pooled Mean</b>	<b>4.70</b>	<b>agree</b>

*Legend:* 6.00- 5.16 strongly agree; 5.14- 4.32 agree; 4.31- 3.49 slightly agree; 3.48-2.66 slightly disagree; 2.65-1.83 disagree; 1.82- 1.0 strongly disagree

As shown in Table 5, the students agree to the following item- statements: subjects in school challenge them; they are skilled in computations; they feel nervous and tense when asked by their teachers to solve problems on the blackboard; and they like science as a subject.

The students slightly agree that they find it challenging to review my science lessons even if they try their best to study the subject.

The students' self-perceptions that they have communication skills enable them to face the many challenges they encounter in their

subjects in science. Touches of insecurities characterize the students when asked to recite in front of the classroom. Anxiety and tension creep in when teachers call on them for this activity. The students perceived that their subjects were complex no matter what effort they exerted to study.

Table 6. *Degree or Level of Students' Inferences of Achievement in Science Relative to Challenges*

Limits	Categories	f	%	Cum%
30-26	Very high	36	34.96	34.96
25-21	High	62	60.19	95.15
20-15	Moderate	5	4.85	100.00
14-10	Low	0	0.00	0.00
9-5	Very low	0	0.00	0.00
Total		103	100.00	100.00

Table 6 shows that the majority of the students, 62 or 60.19, are very high in their inferences of achievement in science in terms of capability. The result implies that most of the students are highly encouraging in their inferences in science regarding challenges.

The students feel that it is worth all the time and energy they put into performing subject-related activities in their science class.

Table 7. *Obtained Weighted Mean and the Verbal Ratings of Item- Statement Relative to Students' Inferences of their Achievement in Science in terms of Challenges.*

Challenges	WM	Interpretation
They exert much effort to learn what is imparted by their teacher in science	5.10	agree
They always do their assignments in their subject in science.	4.72	agree
They always have time to study their lessons in all their subjects.	4.75	agree
They try their best to understand all the lessons taught to them by their teacher in science.	5.46	strongly agree
They ask others when they encounter difficulty with my lessons.	5.12	agree
Pooled Mean	5.03	agree

Legend: 6.00- 5.16 strongly agree; 5.14- 4.32 agree; 4.31- 3.49 slightly agree; 3.48-2.66 slightly disagree; 2.65-1.83 disagree; 1.82- 1.0 strongly disagree

As shown in Table 7, the students strongly agree that they try their best to understand all the lessons imparted to them by their teachers in science.

The students agree that they exert much effort to learn and inquire from others when they encounter difficulty with their lessons; they always do their assignments in their science subjects and always have time to study their lessons in their science subjects.

Diligence describes the students as trying their best to understand all the lessons imparted to them by their science teachers. Students find time to study their assignments in their science subjects.

Table 8. *Degree or Level of Students' Inferences of Achievement in Science Relative to Accountability*

Limits	Categories	f	%	Cum%
30-26	Very high	39	37.88	37.88
25-21	High	55	53.39	91.27
20-15	Moderate	9	8.73	100
14-10	Low	0	0.00	0.00
9-5	Very low	0	0.00	0.00
Total		103	100.00	100.00

Table 8 shows that the majority of the students, 55 or 53.39 percent, are high in their inferences of achievement in science in terms of accountability. The result suggests that the lessons and other activities their teachers in science undertake to catch the students' interest. Consequently, students' enthusiasm is heightened by the activities they are exposed to in their science subject.

The students would not hesitate to spend more time involving themselves in activities related to their science subject. Classroom activities in their subject in science are enjoyable, and the type of activities and assignments given to them by teachers in science challenge them.

Table 9. *Obtained Weighted Mean and the Verbal Ratings of Item- Statement Relative to Students' Inferences of their Achievement in Science in terms of Accountability.*

Accountability	WM	Interpretation
Subject matter in science subject interests them.	4.58	agree
Assignments given to them by their teacher in science are interesting.	4.89	agree
Classroom activities in science subjects are enjoyable.	5.30	strongly agree
The type of activities and their teachers in science challenge them.	5.26	strongly agree
Assignments and projects assigned by science teachers are easy.	4.06	slightly agree
Pooled Mean	4.82	agree

Legend: 6.00- 5.16 strongly agree; 5.14- 4.32 agree; 4.31- 3.49 slightly agree; 3.48-2.66 slightly disagree; 2.65-1.83 disagree; 1.82- 1.0 strongly disagree



As shown in Table 9, the students agree that classroom activities in their subjects are enjoyable, and the type of activities and assignments given to them by teachers in science challenge them.

The students agree that their science class's subject matter and assignments are engaging and enjoyable.

They slightly agree that accountability assigned by their teachers in science is easy. The students enjoy whatever classroom activities they do in their subjects. Students' interest in their subjects depends on the quality of the activities teachers present. The science teachers are cognizant of the type of activities and assignments they give to their students, which, consequently, the students perceive them as demanding yet stimulating accountability.

Table 10. Degree or Level of Students Inferences of Achievement in Science Relative to Teacher's Dynamism

Limits	Categories	f	%	Cum%
30-26	Very high	41	39.81	39.81
25-21	High	59	57.28	97.09
20-15	Moderate	3	2.91	100
14-10	Low	0	0.00	0.00
9-5	Very low	0	0.00	0.00
Total		103	100.00	100.00

Table 10 shows that the majority of the students, 59 or 57.28 percent, are high in their inferences of achievement in science in terms of teacher dynamism. The finding suggests that the students have favorable and commendatory appraisals of their teachers in terms of their personality traits and instructional approaches.

Table 11. Obtained Weighted Mean and the Verbal Ratings of Item- Statement Relative to Students' Inferences of their Achievement in Science in terms of Teacher's Dynamism.

Teacher's Dynamism	WM	Interpretation
Our science teacher does her best to understand the lessons presented.	5.51	Strongly agree
Our science teacher understands the predicament of students who are weak in academic work.	4.87	agree
Our science teacher expects too much from us.	4.84	agree
Our teacher in science projects is very accommodating personality	4.62	agree
Our teacher in science plays favorites	3.56	slightly agree
Pooled Mean	4.68	agree

Legend: 6.00- 5.16 strongly agree; 5.14- 4.32 agree; 4.31- 3.49 slightly agree; 3.48-2.66 slightly disagree; 2.65-1.83 disagree; 1.82- 1.0 strongly disagree

As shown in Table 11, the students strongly agree that their teachers in science do their best to enable them to understand the lessons presented. They agree that their teachers understand the predicament of students who are weak in the subject and that the teachers project a very accommodating personality. They slightly disagree that their teachers play favoritism.

Table 12. Computed F-ratios for the Hypothesis: "Students across genders do not differ in their inferences of Achievement in Science

Inferences	F- ratio	Sig.	Decision
Self- reliance	1.895	.169	Accepted
Capability	.053	.819	Accepted
Challenges	.231	.631	Accepted
Accountability	.259	.611	Accepted
Teacher's dynamism	2.491	.115	Accepted

Table 12 shows the following f-ratios: 1.895 for self-reliance; .053 for capability; .231 for challenges; .259 for accountability; and 2.491 for teacher's dynamism disclosed that male and female students do not differ along these measures relative to their inferences of achievement in science. The hypothesis that students across genders do not differ in their inferences of achievement in science in terms of self-reliance, capability, challenges, accountability, and teacher's dynamism was accepted.

Table 13. Computed F-ratios for the Hypothesis: "Students across strands do not differ in their inferences of Achievement in Science.

Inferences	F- ratio	Sig.	Decision
Self- reliance	16.750	.000	Rejected
Capability	7.593	.000	Rejected
Challenges	1.643	.179	Accepted
Accountability	2.059	.105	Accepted
Teacher's dynamism	9.938	.000	Rejected

As shown in Table 13, students across strands differ in their inferences of achievement in science regarding mean self-reliance as disclosed by the obtained f-ratio of 16.750. The obtained mean score of 25. Eight thousand eight hundred forty-one revealed that

students under the GAS strand tend to be more confident and are more intense in their feelings that their teachers in science are interested in their welfare, such that in terms of capability, as disclosed by the obtained f-ratio of 7.593. the obtained mean score of 24.4674 revealed that the GAS students tend to be more favorable in their inferences of achievement in school in terms of capability. Moreover, regarding teacher dynamism, the obtained f-ratio of 9.938 was disclosed. The obtained mean score of 25.2874 revealed that students under the ABM strand tend to be more favorable and commendatory in their teachers' appraisals regarding their personality traits and instructional approaches.

The hypothesis that students across strands do not differ in their inferences of achievement in science in terms of self-reliance, capability, and teacher's dynamism was rejected. However, in terms of challenges and accountability, it was accepted.

Table 14. *Summary of Coefficient of Correlations in testing the Relationship between Students Performance and their Inferences of Achievement in Science*

<i>Self-reliance</i>	<i>Capability</i>	<i>Challenges</i>	<i>Accountability</i>	<i>Teacher's Dynamism</i>
-.002	-.112*	-.031	.036	-.094

Table 14 shows the obtained coefficient -.112 disclosed that a student's capability is a factor that leads to achievement in science. It is the only capability observed to have a significant relationship to achievement in science. Results imply that students' achievement in science is

It depends on students' having a strong faith and self-reliance in their competencies and capabilities to perform and undertake accountability in their class in science, student competency to understand all the lessons imparted to them by their teachers in science, and how interesting subject matter and assignments are to the students. Results hint that the more students feel that it is worth all the time and energy they put into performing subject-related activities in their science class, the better they will be at achievement.

The hypothesis that there is no significant relationship between students' inferences of their achievement in science and capability was rejected; however, there is no significant relationship between students' inferences of their achievement in science along with self-reliance, challenges, accountability, and teacher's dynamism.

Table 15. *Mauchly's Test of Sphericity*

<i>Domains</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Mauchly's W</i>	<i>df</i>	<i>Sig.</i>
Self-Reliance	103	4.4719	.64405			
Capability	103	4.4039	.57994	.0886	4	.000
Challenges	103	4.4563	.63621			
Accountability	103	4.3709	.59079			
Teacher Dynamism	103	4.4716	.64296			

As shown in Table 15,  $p < .01$  at 1% where  $p = .000$ . This indicates that the assumption of sphericity was not met

Table 16. *Significant difference among the Domains of Inferences of Achievement in Science of the Grade 11 Students*

<i>Domains</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Hyunh-Feldt</i>
Self-reliance	4.4719	.64405	103	
Capability	4.4039	.57994	103	F (2,569) = 7.907
Challenges	4.4563	.63621	103	p = .000
Accountability	4.3709	.59079	103	eta2 = 0.072
Teacher Dynamism	4.4716	.64296	103	

As shown in Table 16, the repeated measures ANOVA with Hyunh-Feldt correction was conducted to assess whether there were differences between the five domains of inferences of achievement in science. Results indicated that students did not rate the five domains distinctively.  $F(2,569) = 7.907$ ,  $p = .000$ ,  $\eta^2 = 0.072$

Table 17. *Significant Influence of Grade 11 Students Demographic Profile on Inferences of Achievement in Physical Science*

<i>Model</i>		<i>Unstandardized Coefficients</i>		<i>Standardized</i>	<i>t</i>	<i>Sig.</i>	<i>Collinearity Statistics</i>	
		<i>B</i>	<i>Std. Error</i>	<i>Coefficients</i>			<i>Tolerance</i>	<i>VIF</i>
1	(Constant)	88.087	1.266		69.603	.000		
	gender	-5.285	1.528	-.590	-3.460	.001	.292	3.423
	strand	2.168	.516	.717	4.204	.000	.292	3.423

a. *Dependent Variable: PERFORMANCE*

Table 17 shows that gender is the predictor of the student's performance since  $p < .01$  where  $p = .01$

## Conclusions

Based on the findings, the following conclusions were arrived at: Students' performance in science ranged from 75 to 95, with a mean of 86.69. The majority of the students are very high in their inferences of achievement on the measure challenges and high in their

inferences of accountability and teacher dynamism. Male and female students do not differ in their inferences of achievement in science; students across strands differ in their inferences of achievement in science. Capability as a measure of students' inferences of achievement was the only variable observed to have a significant relationship with their performances in science. Gender is the predictor of students' academic performance.

Based on the findings and the conclusions drawn, the following recommendations were offered. Teachers of Science should endeavor to come up with enlivening activities that may enhance further students' performance. The high degree of students' inferences of their achievement in science should be closely monitored by the teachers through cooperative endeavors among the teachers of science; students' achievement can spell success in academic endeavors. Teachers should consistently endeavor to provide challenges and activities to the students and develop their self-reliance; likewise, teachers should, from time to time, project professional behaviors and manifest commendatory traits and attributes that students will appreciate and be pleased about. Students' performance in science can further be enhanced through the following: [a] teachers should instill into the consciousness of the students the need to have a strong faith and self-reliance in their competencies and capabilities to perform effectively in all accountability assigned; [b] teachers should provide opportunities and venues to the students to enhance further the degree or quality of students' feeling relative to the time and energy they put into in performing subject-related activities; [c] teachers should incessantly introduce schemes, approaches, and strategies to present their lessons and other activities with the end in view to elicit the interests of the students; and, [d] teachers should continuously exert utmost efforts to recognize students' importance in school and to appreciate the good deeds undertaken by students. Science teachers should find ways and means to identify students' innate capabilities, skills, and competencies that can be intensified with the end to improve students' performance in the subject.

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