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Interest And Performance of Grade 10 Students in Science Modular Learning

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Abstract. This study aimed to investigate the students' performance in science caused by their interest in science and their demographic profile indicated by sex, parents' highest educational attainment, family income, and availability of gadget in a modular learning setting. An interest survey questionnaire which was developed and validated by the researcher and a demographic profile survey were administered to 122 grade 10 students of RPMD National Science High School, Marawi City, Philippines in the first month of the school year 2021-2022. The students were exposed to offline modular learning throughout the school year. The average final grade of the students at the end of the school year served as their performance in science. To support the quantitative data, in-depth interviews were conducted after the final grades became available. The quantitative data were treated and analyzed using descriptive statistics, Pearson correlation coefficient, Chi-square test, and Gamma test while the qualitative data were analyzed thematically. The findings of the study revealed that the interest in science was significantly related to performance in science ($r=.522$, $p<.05$, two tailed test). It also revealed that the sex was significantly associated with the interest in science ($\chi^2=7.149$, $p<.05$, $df=2$) and the performance in science ($\chi^2=8.57$, $p<.05$, $df=2$) in favor of girls. However, parents' highest educational attainment, family income and availability of gadgets were not associated significantly with both interest and performance in science. Meanwhile, the qualitative data revealed that the higher the interest in science of the students, the greater the efforts they exerted in studying the modules and the higher the performance obtained. The study's limitations include a small sample size, the lack of significant associations with parents' education and family income, and its focus on offline modular learning, which may not apply to other educational contexts. Additionally, the timing of interviews after performance assessments may have limited insights into how students' interest developed. Practical implications suggest the need for more engaging teaching strategies, gender-responsive policies, professional development for modular learning, and further research to explore other factors influencing science performance.

Keywords: Science Interest, Science Performance, Modular Learning, Demographic Factors, Marawi City Students

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INTRODUCTION

In this era of information technology, countries are in a race to advance their own science and technology to cope with the rapid changes of the world. In fact, different countries are investing efforts in the advancement of their own educational system in order to prepare their young generation to compete on a global level by providing them with the necessary knowledge and skills. In the Philippines, however, the education system underperformed among peers in East Asia and the Pacific (Cordero, 2018) which can be attributed to several factors such as the ineffective teaching-learning practices.

The ineffective teaching-learning practices resulted to the Filipino students' poor performance in many international assessment tests. For example, the 1999 Trends in International Mathematics and Science Study (TIMSS) results revealed a very dismal performance in science where it ranked 36th out of the 38 participating countries. In 2003 TIMSS, it landed 43rd out of 46 participating countries (Raya, 2021). In 2019 TIMSS, the country scored lowest among 58 participating countries in both mathematics and science (Magsambol, 2020). Similarly, the 2018 Program for International Student Assessment (PISA) result revealed that the Filipino students ranked second lowest in both mathematics and science out of the 79 participating countries (San Juan, 2019). In the 2022 PISA, the Philippines ranked second lowest among 81 participating countries (Malipot, 2023). The consistent declining performance of Filipino students in science in the above international assessments mirrored the degenerating academic performance of the students in the classrooms which is alarming that needs immediate actions of all school stakeholders.

Students' Performance in Science

Academic achievement is a critical aspect of education, reflecting the extent to which students attain their educational goals and demonstrating their knowledge and skills over time (Farooq et al., 2011). According to Narad and Abdullah (2016), academic performance encompasses the knowledge acquired by students, evaluated by educators within a specific timeframe. The significance of students' performance in subjects like science and mathematics extends beyond individual achievement; it serves as a barometer for a nation's socio-economic development. High performance in these areas is indicative of a well-prepared workforce capable of driving economic growth and innovation (Ali et al., 2013). Conversely, poor outcomes in these subjects may signal underlying issues within the educational system and broader socio-economic challenges.

Research consistently identifies a range of factors influencing academic performance, including teaching methodologies and demographic characteristics. Effective student-centered teaching strategies have been shown to enhance engagement and understanding, thereby improving academic outcomes (Ampaso, 2019; Pagayocan, 2018). Additionally, demographic variables such as gender (Joseph et al., 2015; Kohlhass et al., 2010), parental education levels (Edris et al., 2020; Abu Bakar et al., 2017), family income (Machebe et al., 2017), and access to technology (Behnke et al., 2005 as cited in Collison, 2020) significantly impact students' academic success. Understanding these factors is essential for developing targeted interventions that can enhance educational outcomes across diverse student populations.

Students' Interest in Science

Student interest in learning science is a critical factor influencing academic performance and engagement. Interest can be defined as the desire to be involved with and explore a subject, which in the context of science education, reflects students' curiosity and eagerness to learn about scientific concepts (Mappadang et al., 2022). Hidi (1990) argues that interest acts as a cognitive resource that enhances learning outcomes, leading to improved academic achievement. When students exhibit a high level of interest in science, they are more likely to commit to studying the subject, which can also translate into increased enrollment in STEM-related fields (Hulleman & Harackiewicz, 2009). Thus, fostering a genuine interest in science among students is essential for their educational development and future career paths.

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In addition to intrinsic interest, student-centered teaching strategies have been shown to effectively enhance students' engagement and curiosity in science (Ampaso, 2019; Pagayocan, 2018). Research indicates that various demographic factors also play a role in shaping students' interest levels. For instance, studies have linked interest in science to gender differences (Jia et al., 2020; Kang et al., 2018), parental educational attainment (Hacieminoglu, 2015; Dabney et al., 2016; Halim et al., 2018), family income (Conel, 2021; Halim et al., 2018), and access to technology (Syaputri & Usman, 2019). These factors can significantly impact how students engage with scientific content and their overall academic performance. Understanding these influences is crucial for developing effective educational strategies that promote sustained interest and achievement in science.

Modular Learning

Modular learning is an educational approach that organizes curriculum content into self-contained units, allowing students to engage with material at their own pace. In the Philippines, this modality has become essential during the COVID-19 pandemic, facilitating continued education through printed self-learning modules (SLMs) and digital resources (Cañete & Potane, 2022). This method promotes self-directed learning, enabling students to take responsibility for their education while receiving minimal direct instruction from teachers (Roque, 2023). Key components of modular learning include well-structured SLMs aligned with essential learning competencies, assessment tools, and feedback mechanisms to monitor student progress (DepEd Order No. 012, s. 2020). However, despite these components being in place, there is a significant gap in understanding how effectively these modules are implemented and received by students. Research indicates a need to explore how demographic factors—such as socio-economic status and parental involvement—affect student engagement and performance in modular learning settings (Mappadang et al., 2022).

Developing an effective modular learning program requires careful planning and collaboration among educators and stakeholders. This includes creating high-quality SLMs relevant to students' needs and ensuring that teachers are adequately trained to facilitate this mode of instruction (Cañete & Potane, 2022). Establishing robust feedback mechanisms is essential for continuous improvement in teaching strategies and module content. Despite significant efforts by the Department of Education (DepEd) to implement modular learning effectively, challenges remain regarding teacher preparedness and resource availability (Villar et al., 2022). Furthermore, there is a notable lack of empirical studies exploring the lived experiences of students within this modality and how these experiences influence their academic outcomes. Addressing these gaps is crucial for enhancing the effectiveness of modular learning in the Philippines and ensuring it meets the diverse needs of all learners.

Per literature review, there are very few studies that investigated both the performance and interest of students in science in a modular learning setting specifically in Marawi City. Previous studies conducted in nearby areas were focused on investigating the effects of some teaching interventions on students' interest and performance in science (e.g. Ampaso, 2019; Pagayocan, 2018) and no attention has been given to explore the relationship between the two variables--students' interest and students' performance in a modular learning setting.

By exploring and understanding both performance and interest in science of students, we can comprehend better how to address the waning performance in science as well as how to enhance the deteriorating interest in science of the students. On the part of the teachers, they can explore more student-centered teaching methods in their classrooms that can ignite students' interest that will lead to better performance. School administrators can promote more engaging learning activities by capacitating the science teachers through conducting trainings and seminars on both content knowledge and student-centered pedagogy. Learning materials writers can help by promoting more engaging learning activities. And finally, the study can hopefully enlighten future researchers on these crucial educational variables-performance and interest.

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The study is anchored on the following theories: Constructivist Learning Theory, Experiential Learning Theory, and Csikszentmihalyi's Flow Theory.

Constructivism views learning as an active process where individuals construct and reconstruct meanings based on their past experiences, emphasizing that students learn by "constructing" knowledge with teachers acting as facilitators rather than traditional lecturers (Walker et al., 2008). In this study, students engaged in module activities designed to assess and build upon their prior knowledge, enabling them to construct new understanding even in the absence of a teacher. Similarly, David Kolb's Experiential Learning Theory focuses on learning through experience, consisting of four stages: concrete learning, reflective observation, abstract conceptualization, and active experimentation. This approach allows students to take responsibility for their learning by engaging in activities that enrich their experiences and apply their knowledge in real-world contexts (Western Governors University Blog, 2020). Lastly, Csikszentmihalyi's Flow Theory highlights the importance of student interest, describing flow as a state of intense focus and enjoyment that occurs when individuals are fully immersed in an activity (Csikszentmihalyi, 1990). In this study, students experienced flow while participating in various activities within the science module, leading to optimal engagement and intrinsic motivation.

Grounded with previous studies and the three theories, the researcher decided to conduct this research to look deeper into the significance relationship between students' interest and performance in science and the effect of some demographic profiles on these two variables-interest and performance in science.

Shown below is the framework of the research.

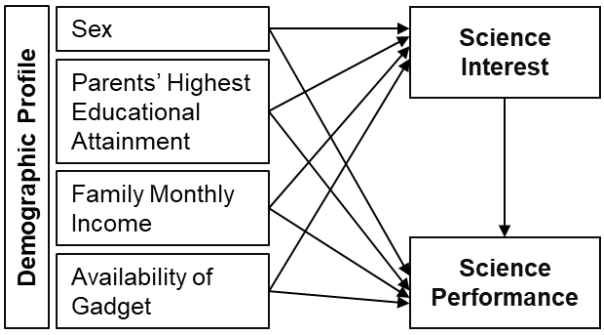


Figure 1. The framework of the research

The framework consists of independent variables and one dependent variable. The independent variables namely the students' demographic profile as indicated by sex, parents' highest educational attainment, family monthly income, and availability of gadget, and the students' interest in science are the possible factors that affect the students' performance in science in modular learning setting. However, the aforementioned independent variables are not necessary that they all affect the students' performance in science. In addition, the students' demographic profile as indicated by sex, parents' highest educational attainment, family monthly income, and availability of gadget are also possible factors that affect the students' interest in science. Similarly, not all the demographic profile indicators are necessary that they all affect the students' interest in science.

RESEARCH OBJECTIVES

The objective of this study was to investigate the students' performance in science in relation to their level of interest in science and their demographic profile in an offline modular learning modality setting. Offline modular learning is a flexible educational approach that utilizes printed self-learning modules (SLMs) to facilitate individualized instruction for students. It is used in this study due to the limited access to internet

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connectivity in the research locale. Specifically, the study aimed the following: (1) assess the performance in science of grade 10 students in a modular learning setting; (2) assess the interest in science of the grade 10 students; (3) assess the demographic profiles in terms of sex, parents' highest educational attainment, family income and availability of gadget of grade 10 students; (4) determine if there is a significant association between students' levels of interest and performance in science and their demographic profiles, specifically in terms of sex, parents' highest educational attainment, family income, and availability of gadgets; (5) determine if there is a significant relationship between the students' interest in science and their performance in science; and (6) compare the difference of the students' level of interest in science with respect to their academic performance.

METHODOLOGY

This study employed both descriptive and correlational research design. It is descriptive in the sense that it sought to describe the students' interest and students' performance in science as well as their demographic profile in terms of sex, parents' highest educational attainment, family income and availability of gadget. It is also correlational because it sought to investigate the existing relationship of the students' interest in science and the students' performance in science. Also, it sought to investigate the relationships of these two variables to students' demographic profiles such as sex, parents' highest educational attainment, family income and availability of gadget.

Participants

The participants of this study consisted of two intact sections of Grade 10 students (N=122) of RPMD National Science High School in Marawi City, Philippines, during 2021-2022 school year. The entire population of Grade 10 students was included in the study, eliminating the need for sampling. The ages of the students ranged from 16 to 19 years old. They represented diverse family backgrounds, including those of government employees, business owners, farmers, and pedicab driver. Additionally, some were orphans who relied on themselves for financial support.

Research Tools

To determine students' interest in learning science, a science interest survey questionnaire was employed. This instrument comprised 15 items on a 5-point Likert scale, which were consolidated from two existing renowned instruments. Seven of the items were adapted from the Interest in Science Scale of the Test of Science Related Attitudes (Fraser, 1981) and eight items were adapted from the Interest in Science Scale of the Mathematics and Science Attitude Survey (Paciorek, 1997). Following consolidation, the questionnaire underwent evaluations for face validity and content validity by three experts in science education research. After several modifications, the instrument was pilot tested, yielding a reliability coefficient of .816 as measured by Cronbach's alpha. To evaluate students' performance in science, their final grades at the end of the school year were utilized. Additionally, in-depth interviews were conducted with 15 randomly selected respondents from the population at the conclusion of the school year.

Ethical Considerations

Several ethical considerations were taken into account throughout the study. Prior to data gathering, the participants were informed of the purpose of the study and their right to decline to participate, and their rights to withdraw at any time from participations. In compliance with DepEd Order No. 40, series of 2012, parental consent was sought from the parents or guardians of participants who were under 18 years of age. Out of 122 participants, fifty-seven were below 18, and all complied with this requirement. Participants aged 18 and older were not required to obtain consent according to the aforementioned order. Subsequently, the science interest survey questionnaire as well as

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the demographic profile were administered. Qualitative data were collected though one-on-one interviews.

Data Analysis

The data collected were then subjected to appropriate statistical analyses using Statistical Package for the Social Sciences (SPSS) software. The descriptive statistics, such as the frequency, percentage, mean, and standard deviation, were used to describe the Science Interest Survey, the performance in science, and the demographic profile variables. Pearson r correlation coefficient was used to determine the relationship between the students' interest and the students' performance in science. Chi-square was used to determine if there were significant associations in the following pairs of variables: between the students' level of interest and the students' sex; between the students' level of interest and the availability of gadget; between the students' level of performance and the students' sex; and between the students' level of performance and the availability of gadget. On the other hand, Gamma test was used to determine if there were significant associations in the following pairs of variables: between the students' level of interest and the parents' highest educational attainment; between the students' level of interest and the family monthly income; between the students' level of performance and the parents' highest educational attainment; and between the students' level of performance and the family monthly income. Finally, the qualitative data were analyzed thematically. The researcher began by transcribing the interview data, which was then reviewed by a fellow researcher. The transcriptions were thoroughly read and re-read by the researcher to familiarize themselves with the content and context of the responses. Next, initial codes were generated by highlighting significant phrases or concepts that resonated with the research questions, ensuring a wide range of ideas was captured. After completing the coding process, the researcher grouped these codes into broader themes that reflected common patterns and insights across the interviews, subsequently reviewing and refining these themes to ensure they accurately represented the data. Each theme was clearly defined and named, ensuring that they were distinct and coherent. Finally, the researcher compiled the findings into a comprehensive report.

RESULTS AND DISCUSSION

The findings of the study revealed that majority (50.82%) of the students had fairly satisfactory performance in science; majority (68.85%) of the students were moderately interested in science; majority of the respondents were female (66.39%), children of parents who finished college (32.79%) and high school (32.79%), belonged to a family with a monthly income of below 20,000 pesos (81.15%), and had gadget available (97.54%).

Table 1. Association between Demographic Profile and Level of Interest

Association	Test Used	Value Obtained	Significance Level	Degrees of Freedom	Remarks
Sex and Level of Interest in Science	Chi-square Test	7.149	.05	2	Significant
Parents' Highest Educational Attainment and Level of Interest in Science	Gamma Preliminary Reduction Test	.20	.05		Non-significant
Family Monthly Income and Level of Interest in Science	Gamma Preliminary Reduction Test	.086	.05		Non-significant

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Availability of Gadget and Level of Interest in Science	Chi-square Test	3.68	.05	2	Non-significant

The association between **sex and level of interest** in science was determined using Chi-square test. The value obtained was 7.149 which is significant at .05 level of significance, df=2. This finding indicated that there were more girls who had higher level of interest in science than boys. This asserted that gender was associated to the level of interest of students in science. The finding was supported by Jia et al. (2020) and Kang et al. (2018) that there were clear gender differences with regards to interest in science in favor of the girls.

The association between the **parents' highest educational attainment and the level of interest** in science was determined using Gamma preliminary reduction test. The value obtained was .20 which was tested at .05 level of significance. The value signified a very weak or no significant association between the parents' highest educational attainment and the students' level of interest in science. Statistically, the value of .20 means that only 20% fewer errors predict students' interest in science using the parents' highest educational attainment. This indicated that parents' highest educational attainment per se does not contribute to their children's interest in science. This finding was in line with Halim et al. (2018) that the positive perceptions and values of parents towards the subject of science, not the educational attainment, propelled parents to cultivate their children's interest in science and any science related careers. However, the finding was contrary to Dabney et al. (2016) and Hacieminoglu (2015) that parents' educational attainment was positively associated to the students' attitude towards science.

The association between the **family monthly income and the level of interest** in science was determined using Gamma preliminary reduction error test. The value obtained was .086 which was tested at .05 level of significance. The value indicated a very weak or no significant association between the family monthly income and the students' level of interest in science. In statistical sense, the value of .086 means that only 8.6% fewer errors are made if the family monthly income is used to predict the students' level of interest in science. In other words, students' variation in terms of economic status did not determine their interest in science. Even children of low-income group can have high interest in science. This could be explained by the perception that parents vary in the extent of supporting their children regardless of their economic status. Even parents of the same economic status may vary in the extent of providing financial support to their children. The finding was affirmed by Conel (2021) that there was a negligible positive correlation between the students' family income and students' interest in science.

The association between the **availability of gadget and the level of interest** in science was determined using Chi-square test. The test revealed a value of 3.68 which was not significant at .05 level of confidence with df=2. This means that students' interest in science was not affected by any availability of gadget. One can be interested in science regardless of whether he/she owns a gadget or not. This finding was supported by Syaputri & Usman (2019) that the use of gadget has a very minimal effect (around 1.1%) on students' interest in learning. On the contrary, the finding was disputed by Djumingin et al. (2021) that a gadget has a positive and a significant effect on students' interest in learning.

Table 2. Association between Demographic Profile and Level of Performance

Association	Test Used	Value Obtained	Significance Level	Degrees of Freedom	Remarks
Sex and Level of Performance in Science	Chi-square Test	8.57	.05	2	Significant

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Parents' Highest Educational Attainment and Level of Performance in Science	Gamma Preliminary Reduction Test	.119	.05		Non-significant
Family Monthly Income and Level of Performance in Science	Gamma Preliminary Reduction Test	.09	.05		Non-significant
Availability of Gadget and Level of Performance in Science	Chi-square Test	.40	.05	2	Non-significant

The association between **sex and level of performance** in science was determined using Chi-square test. The value obtained was 8.57 which is significant at .05 level of significance, df=2. The finding indicated that female students had a higher performance than males. This finding also suggested that female students were more likely to have a higher academic performance in science than males. This finding was supported by El Refae et al. (2021) that there was a positive significant relationship between gender and student GPA both in face-to-face learning and in distance learning. The same finding was reported by OECD (2020) that girls outperformed boys in science in PISA 2018.

The association between the **parents' highest educational attainment and the level of performance** in science was determined using Gamma preliminary reduction test. The value obtained was .119 which was tested at .05 level of significance. The value signified a very weak or no significant association between the parents' highest educational attainment and the students' level of performance in science. Statistically, the value of .119 means that only 11.9% fewer errors are made if the parents' highest educational attainment is used to predict the students' level of performance in science. In other words, parents' highest educational attainment was not related with the students' performance in science. This was supported by Darko-Asumadu and Sika-Bright (2021) that the parents' education did not significantly affect the students' academic performance. In fact, a study conducted by Fasasi (2017) found that students from lowly educated parents had better performance than students from highly educated parents.

The association between the **family monthly income and the level of performance** in science was determined using Gamma preliminary reduction error test. The value obtained was .09 which was tested at .05 level of significance. The value indicated a very weak or no significant association between the family monthly income and the students' level of performance in science. In statistical sense, the value of .09 means that only 9% fewer errors are made if the family monthly income is used to predict the students' level of performance in science. In other words, the family income did not contribute to the academic performance of students in science. Indeed, there are students who belong to the low-income family who excel in science. The finding could be attributed to the perception that whilst majority of the parents belong to the low-income earners, they might have prioritized the basic needs of their family, such as food instead of spending for educational materials. This finding was supported by Gobena (2018) and Machebe et al. (2017) that family affluency does not affect students' academic performance.

The association between the **availability of gadget and the level of performance** in science was determined using Chi-square test. The test revealed a value of .40 which indicated no significant association. The finding indicated that gadget ownership is not the main factor that can affect students' performance in science. Indeed, there are students who use gadget frequently, yet, they excel in their classes. Similarly, some students who frequently use gadget have failing grades. Perhaps, it is on how a person uses gadget that can affect his/her performance, but not the mere ownership of a gadget. The finding was

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supported by Balbaguio (2020) that no significant impact of the electronic gadgets on the academic performance of students. In fact, Othman et al. (2020) found out that students who spent more time on electronic gadget has a high level of dependency towards gadget which led to poor academic achievement.

Table 3. Correlation Between the Performance and Interest in Science

Association	Test Used	Value Obtained	Significance Level	Remarks
Performance in Science and Interest in Science	Pearson's Correlation Coefficient Test	.522	.05, two-tailed test	Significant

The study hypothesized that a student's interest in science contributes to his/her academic performance in science. To determine the validity of this hypothesis, Pearson's correlation coefficient test was utilized. The r value obtained was .522, which is a value that is significant ($p < .05$, two-tailed test). Hence, the null hypothesis that there is no significant relationship between the respondents' interest in science and their performance in science is hereby rejected. In other words, the students' interest in science is positively related to their academic performance in science. The higher the interest of a student in science is, the higher his/her academic performance would be.

This particular finding is consistent with the motivation theory. One's interest on something is an indication of his/her motivation. Indeed, according to the theory of motivation, one who is properly motivated to do something tends to perform better than those who are not motivated. In the same token, one who is not interested to learn the subject cannot be expected to have higher grades. The finding is in agreement with several studies abroad. Dahliani et al. (2020) found a significant correlation between students learning interest in learning Biology with students learning outcomes. Another recent study conducted by Mappadang et al. (2022) found that students' psychological conditions, as one of academic interest, contribute significantly to improving academic performance. This indicates that the higher the academic interest, the more the students will make an effort in their learning for better results. Moreover, a study conducted by Abaidoo (2018) found that one of the student factors that contribute to an improvement in academic performance is interest in a subject.

Meanwhile, the thematic analysis of the qualitative data revealed the following: (a) the less interested and low performer students were struggling in understanding the content of modules which often led them to just set aside their modules without reading them. They did not have timetable for studying and they were very occupied by leisure activities, such as playing online games and basketball. Hence, the average of their final grade was categorized as low; (b) the moderately interested and moderate performer students were reading their modules more than once depending on their mood. However, their attention on their module was easily diverted to social media and online games. Also, their timetables for studying were not followed. The average of their final grades was categorized as moderate. On the other hand, (c) the highly interested and high performer students read their modules many times until they understood them well. Whenever they encountered unfamiliar or difficult concepts to understand, they sought help from more knowledgeable people or made use of their internet resources. They strictly followed their timetables for studying and they even spent their leisure times in studying their modules. The average of their final grades was categorized as high. To wrap things up, the higher the interest in science, the higher the effort exerted by the student, which resulted to higher performance in the subject.

The study has few limitations including the small sample size of 122 students from a single school which limits the generalizability of the findings to broader populations, the lack of significant associations with parent's educational attainment and family income

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suggests that other unexamined variables may influence students' interest and performance in science, the focus on offline modular learning may not reflect the dynamics of traditional classroom settings or online education, potentially affecting student engagement differently, the qualitative interviews conducted after performance assessments may limit insights into how students' interest develop throughout the learning process.

Moreover, the variable "availability of gadgets" was operationalized in this study by asking participants about the gadgets they possessed to assess their impact on students' educational experiences. However, simply owning a gadget does not fully capture its effectiveness in enhancing learning outcomes. It is crucial to consider how these devices are used for educational purposes, such as accessing online resources and engaging in interactive learning, which this study did not address. Therefore, future research should focus on both the availability and practical use of gadgets to gain a better understanding of their role in student performance and interest in science education.

CONCLUSION AND IMPLICATIONS

This study provides valuable insights into how students engage with science, revealing some noteworthy trends. Most strikingly, female students showed greater interest and performed better in science than their male peers. Interestingly, factors like parental education and family income didn't seem to have a significant impact on students' interest or performance. The presence of gadgets also didn't play a meaningful role. Qualitative feedback from students highlighted that those who were more interested in science tended to put in more effort, leading to better results.

These findings carry important implications for educators, parents, and policymakers. First and foremost, there's a clear need for initiatives aimed at boosting interest in science among male students, helping to close the gender gap in both engagement and achievement. Since parental education and income didn't significantly affect outcomes, focusing on developing strong study habits and support systems for students who struggle could be more beneficial.

Creating hands-on, interactive learning experiences can ignite students' passion for science, making it feel relevant and exciting. Additionally, teaching students how to use technology as a helpful learning tool—rather than a source of distraction—can enhance their academic experience. Ultimately, by fostering a supportive environment that caters to students' interests and challenges, we can help them thrive in science and beyond.

Moreover, future research should explore a broader range of variables influencing student performance and interest in science, including, but not limited to, teaching methods, classroom environment, peer interactions, and access to resources. This approach will help develop a more nuanced and comprehensive understanding of the multifaceted factors that contribute to academic success in science. Additionally, research should focus on both the availability and practical use of gadgets to gain deeper insights into their role in student performance and interest in science education.

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