

The Mediating Role of Science Motivation in the Relationship between Computer Literacy and Academic Performance of Grade 6 Learners

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ABSTRACT

In the current digital era, education research is increasingly focusing on the correlation between computer literacy, science motivation, and academic achievement. Thus, this quantitative research aimed to determine the mediating role of science motivation on the relationship between computer literacy and the academic performance of Grade 6 learners during the academic year 2023-2024. Modified and adapted survey questionnaires from the Department of Education Computerization Program (DCP), Cagayan State University – Andrews Campus, and Glynn (2011), using a 5-point Likert scale, were employed for data collection. Analysis involved mean, two-way ANOVA, and path analysis. Results showed that the Grade 6 learners exhibited a high level of computer literacy in terms of computer integration (mean=3.78). The academic performance of Grade 6 learners indicated a very high level in terms of student-related factors (mean=4.3). Concurrently, Grade six learners are often more extrinsically motivated (mean=4.09). Significant indirect relationship was shown between computer literacy and academic performance through science motivation. Significant direct relationship was also shown between computer literacy and academic performance. The total effect estimates of 0.531 (SE = 0.0804, Z = 6.61, $p < 0.001$) suggests that there is a significant overall relationship between computer literacy and academic performance, regardless of the mediating effect of science motivation. Recommendations can be made for future researches as to longitudinal study, qualitative researches, and intervention studies.

Keywords: computer literacy, science motivation, academic performance, grade six, quantitative, Philippines

INTRODUCTION

In the current digital era, education research is increasingly focusing on the correlation between computer literacy, science motivation, and academic achievement. This is due to the pervasive integration of technology in various aspects of our daily lives. While there is consensus on the importance of computer literacy in navigating the digital realm, its specific impact on academic achievement remains complex and multifaceted. Moreover, the extent to which science motivation acts as a mediator in the relationship is uncertain. The lack of understanding in this area hinders the complete utilization of technology in educational environments. It highlights the necessity for further investigation to elucidate the mechanisms via which science motivation influences academic performance through computer literacy.

The intersection of computer literacy and academic accomplishment poses multiple challenges in

contemporary schooling (Cadiz-Gabejan, Medalia & Takenaka, Melinda Jr., 2021). An important issue arises from the digital divide, which refers to the unequal effect on students from impoverished communities caused by disparities in technology access and internet availability (Chipeva et. al, 2018). This discrepancy can hinder the development of computer literacy skills that are crucial for navigating modern educational environments and obtaining online resources (Ziemba & Becker, 2019). Consequently, students lacking enough computer literacy may face barriers that impede their full engagement in digital learning platforms and may struggle to complete projects or tests that need technological proficiency (Leander, Scharber, & Lewis (2017). The reliance on digital technologies for collaborative projects, multimedia presentations, and research worsens academic disparities, putting students with poor computer literacy at a disadvantage compared to their more technologically adept peers.

Moreover, the swift advancement of technology poses a constant difficulty for educators in properly incorporating digital resources into the curriculum to improve academic performance (Grigoryeva, Abukenova, & Gill, 2018). To stay up-to-date with educational technology and provide fair access and effective integration into teaching, continuous professional development and allocation of resources are necessary (Haleem et al., 2022). Besides, there is a significant disparity in the caliber of computer literacy education provided by different educational institutions, resulting in inconsistencies in students' mastery of the subject and consequent effects on their academic performance (Linder-VanBerschot & Summers 2015; Westera, 2015). To tackle these problems, it is crucial to adopt a complete approach that takes into account not only the availability of technology but also the cultivation of important digital literacy skills that are necessary for academic achievement in today's technology-driven society.

A significant barrier exists in the relationship between motivation in science and proficiency in computer skills, especially in educational settings (Huang et al., 2020). Science motivation is essential for generating interest and involvement in scientific fields, whereas computer literacy is crucial for accessing and effectively using digital learning materials (Anthonysamy et al., 2020). Nevertheless, variations in computer literacy proficiency among students can hinder their capacity to effectively participate in scientific content and activities, irrespective of their level of interest (Aitokhuehi, & Ojogho, 2014). Students who possess limited computer literacy may encounter difficulties in navigating online scientific databases, conducting research, or engaging effectively in digital science simulations or experiments (MathGenie, 2018). The difference in technological skills might impede students' capacity to fully exploit their inherent drive for research, which may result in reduced enthusiasm, detachment, and ultimately, diminished academic performance in scientific-related disciplines. To tackle this issue, a thorough strategy is needed that not only promotes enthusiasm for science but also guarantees fair availability of technology and encourages the acquisition of crucial computer literacy skills vital for meaningful involvement with scientific educational materials (Leonard, 2019).

Within the setting of sixth-grade learners, the link between motivation in science and academic achievement presents numerous difficulties. An essential concern pertains to the declining enthusiasm and involvement in scientific disciplines as learners progress from basic to secondary school (Hafizoglu & Yerdelen, 2019). Factors such as heightened academic expectations, changing priorities, and the impression of science as difficult or unimportant may contribute to a decrease in learners' motivation levels (Yilmaz, Sahin, & Turgut, 2017).

The waning desire can adversely impact academic achievement, as disengaged students may encounter difficulties in understanding scientific topics, actively participating in class discussions, or efficiently completing assignments (Doll, Eslami, & Walters, 2013). Further, a lack of sufficient opportunities to participate in captivating and interactive educational activities in the field of science, along with insufficient assistance or materials provided by teachers, might intensify the gap between motivation to study science and actual academic success (Shabiralyani et al., 2015). To tackle these challenges, specific interventions

are needed that not only foster a sense of curiosity and excitement for science, but also offer chances for practical exploration, inquiry-based learning, and individualized assistance to improve the academic achievement of sixth-grade students in science subjects.

In the Philippines, the average performance in science of 15-year-olds is 356 points, compared to an average of 485 points in OECD countries. Almost no students in the Philippines were top performers in mathematics, meaning that they attained Level 5 or 6 in the PISA mathematics test (OECD average: 9%).

Given the issues at hand and the interconnectedness of the variables, there is a pressing need to carry out the investigation. It is essential to tackle this issue to provide valuable insights for implementing effective educational strategies that utilize technology to enhance both motivation and academic performance in science-related disciplines.

A. Statement of the Problem

This study investigates the mediation role of science motivation in the correlation between computer literacy and performance in school among sixth-grade students is based on the crucial stage of development of these learners and the growing significance of digital literacy in contemporary education. During grade six, children experience a significant shift as they start to interact with more intricate academic material and utilize advanced technological resources. Educators can customize interventions to overcome potential obstacles or boost factors that promote learning by comprehending the influence of science motivation on the utilization of computer literacy abilities and its subsequent impact on academic performance. Furthermore, by examining the relationship between science motivation, computer literacy, and academic performance among sixth-grade students, we can gain insights into how these factors influence students' overall development and success in science-related subjects. This research can help us develop specific strategies to enhance students' understanding of the world, foster critical thinking skills, and promote academic achievement. This study project has the potential to provide useful insights into effective teaching methods that smoothly incorporate technology into science education. As a result, it can equip sixth-grade students to succeed in a society that is becoming more digital and knowledge-focused.

REVIEW OF RELATED LITERATURE

A. Computer Literacy

In the present era, technology pervades our surroundings, facilitating routine activities. Engaging in activities such as communication, education, job, acquisition of knowledge, travel, entertainment, and even sleep, practically every element of our life entails the utilization of a computing device to facilitate, monitor, or observe a certain process. (Rodríguezde-Dios, van Oosten, & Igartua, 2018). However, it is important to note that the ability to utilize these technologies comes with a prerequisite: the possession of the necessary knowledge and abilities. In order to utilize a computer effectively, one must acquire knowledge, engage in study, develop an awareness of its capabilities, and evaluate its optimal applications and methods of use. This work aims to condense the essential knowledge into a single term, namely "literacy".

Cohen (2010) asserts that computer literacy is essential for all individuals, especially students. According to Reynolds (2008), computer literacy refers to having knowledge about the capabilities of hardware and software, as well as knowing how computers and the internet may improve students' educational experiences. Computer literacy refers to the fundamental comprehension of operating computers and related technologies, such as tablets and smartphones. Therefore, possessing computer literacy provides a learner with the chance to adapt to the swiftly evolving technological landscape.

A significant number of individuals, particularly those who were not exposed to technology from a young

age, struggle to comprehend the complex systems required for computer literacy. Computer utilization necessitates problem-solving skills, the capacity to comprehend text and symbols, and the cultivation of diverse technical and cognitive abilities, although this may not be immediately apparent to individuals with an innate understanding of computer usage. There was a time in the past when having computer skills was not mandatory. Proficiency in computer usage is an essential requirement for achieving success in academic pursuits, professional endeavors, and day-to-day activities (MathGenie, 2018).

Computer literacy encompasses a spectrum of proficiency levels, spanning from fundamental computer operations to complex programming. A parent can be unaware that their child is lagging in this domain. To possess a fundamental understanding of computer literacy, it is essential to possess the ability to perform the following tasks: powering a computer on and off, utilizing an operating system, operating software applications, utilizing the internet, navigating through computer menus and search functions (Leonard, 2019). Computer competency refers to the capacity of a pupil to effectively perform basic computing tasks at a school level. To establish fundamental computer aptitude, a student must exhibit mastery in Microsoft Word, Excel, PowerPoint, and fundamental computing skills.

The Department of Education (DepEd) implements the DepEd Internet Connectivity Project (DICP) by DepEd Order Number 50, series of 2009. Initially, the project was implemented in secondary schools and later extended to the elementary level, aligning with the DepEd Computerization Program (DCP) outlined in DepEd Order No. 78, s. 2010 (Department of Education, 2011). Using this initiative, in collaboration with governmental and private organizations, e-classrooms have been furnished to primary schools and integrated with Information and Communication Technology (ICT) to enhance the ICT proficiency of students and alleviate the shortage of computers in public schools.

Consequently, this necessitates computer literacy among learners. The lessons at school are technology-oriented, indicating a high demand for computer literacy among kids. Approximately 95 percent of the students possess computer literacy skills. However, the implementation of blended learning in the current situation has introduced new platforms that have proven challenging for students to navigate. The complex features of these platforms have hindered their ability to submit their work online, causing delays in meeting submission or completion deadlines. At Silanga National High School (SNHS), in the Catbalogan VIII District, there is a strong need for computer literacy among junior high school students. This program is being developed to improve the teaching and learning process.

In the contemporary era dominated by digital technology, possessing computer literacy is not only helpful but imperative for students to excel academically and professionally (Lcom Team, 2023). Computer literacy provides learners with the essential abilities required to efficiently explore and utilize a diverse range of digital tools and resources (Jain, 2023). Proficiency in computer literacy empowers students to confidently and independently engage in modern learning environments by performing research, accessing instructional materials, interacting with peers, and presenting findings (Smith & Storrs, 2023).

Furthermore, with the ongoing integration of technology into different facets of everyday life and professional environments, possessing computer literacy equips students with the necessary skills to meet the requirements of a progressively digital society (Spante et al., 2018). This not only enhances their competitiveness in the employment market but also grants them access to a diverse array of options (Tang & Chaw, 2016). Hence, it is crucial to cultivate computer literacy among students to provide them with the necessary skills and abilities required for success in the modern world.

B. Academic Performance

Academic performance refers to the level of accomplishment that a student, instructor, or institution has achieved in meeting their educational goals, whether they are short-term or long-term. This achievement is

evaluated by ongoing assessments or by calculating the cumulative grade point average (CGPA) (Tadese, Yeshaneh, & Mulu, 2022). Likewise, academic performance refers to a student's capacity to fulfill academic tasks, and it is evaluated based on objective measures such as final course grades and grade point averages (Naser & Hamzah, 2018; Olivier et al., 2019).

Multiple scholars have found various aspects that impact a student's academic performance (Kim et al., 2018; Lei, 2018). Amidst the current era of globalization, expanding economies, and swift progress, enhancing educational performance and retention rates is vital for the prosperity of any country. Education is considered crucial for individuals as it is necessary for securing lucrative employment, attaining success, and improving living standards (Alsheikh, 2019; Mishra, 2019).

As the number of educational institutions increases, it becomes more important to prioritize equipping students with specialized knowledge and technical skills. This will enhance their productivity and improve their chances of a better quality of life, ultimately contributing to a country's economic advancement (Stanca et al., 2021; Tri et al., 2021).

The main objective of educational institutions is to aid students in comprehending course content and achieving a grade that enables academic and professional progress (Apriana et al., 2019).

C. Science Motivation

Science motivation pertains to the intrinsic desire, curiosity, and passion that individuals have for participating in scientific concepts, activities, and investigations (Areepattamannil et al., 2023). It involves the inherent urge to investigate the natural world, comprehend scientific phenomena, and acquire information about the principles that govern the cosmos. Science motivation is frequently defined by a feeling of inquisitiveness, awe, and captivation towards scientific findings, theories, and investigation (Zhang, Bae, & Broda, 2022). Individuals who possess motivation in the field of science generally display an authentic curiosity in acquiring knowledge about scientific subjects. They actively seek out chances to interact with scientific material and demonstrate perseverance and commitment in their quest to comprehend intricate scientific ideas (Wood, 2019). Furthermore, science motivation has a broader impact than only academic achievement, as it affects people's attitudes, beliefs, and actions towards science-related topics and professions, determining their lifelong learning paths and contributions to the scientific community.

The idea of science motivation is characterized by its multidimensional nature, which includes a range of aspects that impact individuals' involvement and enthusiasm for research (Wong, Liang, & Tsai, 2021). These elements encompass personal experiences, inherent interests, perceived significance, and social influences. Engaging in personal experiences, such as conducting practical experiments, pursuing science-related hobbies, or being influenced by scientific role models, can have a substantial impact on cultivating motivation for science by igniting curiosity and establishing a favorable disposition towards the subject (Vinni-Laakso et al., 2019).

Moreover, individuals' inherent interests and fervor may fuel their urge to delve into particular scientific topics or pursue professions in science-related industries (Ustun, 2023). Perceived relevance pertains to individuals' beliefs of the practical usefulness and significance of scientific knowledge in their lives. Higher levels of perceived relevance typically correspond to increased science motivation. Ultimately, social factors, such as positive reinforcement from parents, support from teachers, and interactions with peers, can mold individuals' attitudes and inclinations towards science by offering validation, encouragement, and chances for collaboration and joint investigation of scientific subjects (Taskinen, Schutte, & Prenzel, 2013). In essence, science motivation is a multifaceted and ever-changing concept that encompasses an individual's intrinsic motivation, inquisitiveness, and passion for scientific investigation and exploration.

D. Theoretical Framework

Self-Determination Theory (SDT) is a potential framework that could establish a link between science motivation, computer literacy, and academic performance. Self-Determination Theory (SDT) by Ryan and Deci (2000) proposes that humans are driven by three inherent psychological needs: autonomy, competence, and relatedness. Science motivation in this context refers to the inclination to participate in scientific endeavors and seek scientific understanding, motivated by the desire for proficiency and independence. Computer literacy can help individuals meet their demand for competence by equipping them with the essential skills and tools to traverse digital resources proficiently. As individuals acquire greater expertise in utilizing technology, they may experience an enhanced sense of control and self-assurance in their intellectual aptitude. Consequently, computer literacy can have a beneficial impact on students' academic performance by enabling them to easily access educational materials, research resources, and communication platforms. Moreover, the incorporation of technology in science education can augment involvement and encourage dynamic learning, hence encouraging science motivation and academic achievement. Thus, based on Self-Determination Theory (SDT), the satisfaction of psychological needs through interest in science and proficiency in computer skills may have a good influence on academic achievement.

Self-determination theory (SDT) focuses on individuals' motivation to initiate behavior. SDT encompasses three distinct forms of motivation: a) amotivation, b) extrinsic motivation, and c) intrinsic motivation (Ryan and Deci, 2000). According to Vinther and Lauridsen (2020), intrinsic motivation is the most potent form of motivation in comparison to other external incentives due to its self-driven nature. Self-motivation is an essential quality that fosters positivity in people, empowering them to persevere and demonstrate steadfast commitment to their goals, particularly when faced with challenges. Intrinsic motivation can be seen through motivational beliefs, which are socio-affective strategies used by students to manage their emotions during studying.

This theory will pave the way in identifying the mediating role of science motivation in the relationship between computer literacy and the academic performance of Grade Six learners.

METHOD

This study employed a quantitative research design that incorporated a descriptive correlation with mediation analysis. This technique is a non-experimental design, wherein the researcher investigates the correlation between two or more variables in a real-life environment without any manipulation or control. The utilization of descriptive correlation with mediation analysis provides a comprehensive examination of the relationship between mathematical attitude, technological competence, and problem-solving ability. By utilizing this approach, researchers did not only ascertain the statistical associations between these variables but also revealed the fundamental mechanisms that are impacting the link. For instance, the study could ascertain whether a strong inclination towards science serves as an intermediary element that influences the relationship between computer literacy and academic achievement. Employing descriptive correlation with mediation analysis improved our comprehension of the interactions between these variables, resulting in a more comprehensive and applicable interpretation of their connections in the context of education and academic performance.

The research was carried out at public primary schools located in Piedad District, which are part of the Division of Davao City in Region XI. The sample comprised 100 Grade 6 learners from these institutions, which was adequate for examining the highlighted concerns and obstacles. The sample size used in this study is consistent with the results of a prior research conducted by Sim, Kim, and Suh (2021). Their study indicated that sample sizes between 171 and 308 are typically sufficient for examining correlations and

mediating effects in straightforward mediation models.

The researcher utilized the approach of simple random sampling to select participants for the study, a technique that is especially efficient when working with heterogeneous populations. This technique is ideal for the study as it avoids bias and ensures precise representation. Consequently, a total of 100 samples will be gathered from Grade 6 learners. The selection criteria for respondents are as follows: (a) they must be currently enrolled learners in the research locale for the school year 2023-2024, and (b) they must be learners in Grade six.

TABLE I. Interpretation of the Level of Computer Literacy of Grade 6 Learners

Range of Means	Descriptive Level	Interpretation
4.20-5.00	Strongly Agree	This means that the computer literacy of Grade 6 learners is always manifested.
3.40-4.19	Agree	This means that the computer literacy of Grade 6 learners is often manifested.
2.60-3.39	Neutral	This means that the computer literacy of Grade 6 learners is sometimes manifested.
1.80-2.59	Disagree	This means that the computer literacy of Grade 6 learners is rarely manifested.
1.00-1.79	Strongly Disagree	This means that the computer literacy of Grade 6 learners is never manifested.

TABLE II. Interpretation of the Level of Academic Performance of Grade 6 Learners

Range of Means	Descriptive Level	Interpretation
4.20-5.00	Strongly Agree	This means that the academic performance of Grade 6 learners is always manifested.
3.40-4.19	Agree	This means that the academic performance of Grade 6 learners is often manifested.
2.60-3.39	Neutral	This means that the academic performance of Grade 6 learners is sometimes manifested.
1.80-2.59	Disagree	This means that the academic performance of Grade 6 learners is rarely manifested.
1.00-1.79	Strongly Disagree	This means that the academic performance of Grade 6 learners is never manifested.

TABLE III. Interpretation of the Level of Science Motivation of Grade 6 Learners

Range of Means	Descriptive Level	Interpretation
4.20-5.00	Strongly Agree	This means that the science motivation of Grade 6 learners is always manifested.
3.40-4.19	Agree	This means that the science motivation of Grade 6 learners is often manifested.
2.60-3.39	Neutral	This means that the science motivation of Grade 6 learners is sometimes manifested.
1.80-2.59	Disagree	This means that the science motivation of Grade 6 learners is rarely manifested.

1.00-1.79	Strongly Disagree	This means that the science motivation of Grade 6 learners is never manifested.
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RESULTS AND DISCUSSIONS

This chapter discusses the findings on the science motivation, computer literacy, and academic performance of Grade 6 learners. This chapter presents the analysis of the data gathered and interprets the results. The presentation of data is aligned with the statement of the problem.

A. Level of Computer Literacy of Grade 6 Learners

The succeeding table provides the findings of a study that aimed to assess the level of computer literacy among Grade 6 learners in terms of their computer skills which focused on five statements relating to various computer tasks, including operating a personal computer, deleting and renaming files, creating a word document, printing a document, and downloading and saving files.

TABLE IV.1 Level of Computer Literacy of Grade 6 Learners in terms of Computer Skills

Computer Skills	Weighted Mean	Verbal Interpretation
I am able to operate a personal computer.	3.5	Agree
I am able to delete and rename files.	3.22	Neutral
I am able to create word document.	2.81	Neutral
I am able to print a document.	3.07	Neutral
I am able to download and save files.	3.67	Agree
Overall	3.25	Neutral

For the statement “I am able to operate a personal computer,” the weighted mean is 3.5, indicating that Grade 6 learners generally agree that they possess the knowledge and skills to operate a personal computer effectively. In terms of deleting and renaming files, the statement “I am able to delete and rename files” has a weighted mean of 3.22, reflecting a neutral stance among the learners.

Similarly, for the statement “I am able to create word document,” the weighted mean is 2.81, once again indicating a neutral stance. Some learners may feel comfortable performing this task, while others may need additional support and instruction to enhance their skills. Regarding the statement “I am able to print a document,” the weighted mean is 3.07, reflecting a neutral stance among the learners which suggests that Grade 6 learners possess a moderate level of proficiency when it comes to printing documents.

Finally, for the statement “I am able to download and save files,” the weighted mean is 3.64, indicating that Grade 6 learners generally agree that they are able to download and save files. Overall, the findings indicate that Grade 6 learners have a positive perception of their computer literacy skills in terms of operating a personal computer and downloading and saving files. However, there are areas, such as deleting and renaming files, creating word documents, and printing documents, where learners have a more neutral stance.

Although there may be a scarcity of literature specifically focusing on the downloading and file-saving practices of sixth-grade students, current studies on the use of digital technology by children and teenagers can offer valuable insights.

A recent study conducted by Rideout et al. (2019) revealed a substantial rise in children’s utilization of

digital devices, such as smartphones, tablets, and computers. This surge encompasses a wide range of activities, including the downloading and storage of files.

Moreover, a study conducted by Twenge and Campbell (2018) brought attention to the increasing prevalence of screen time among young children. This encompasses behaviors such as downloading applications, playing games, and accessing multimedia content. These findings indicate that sixth-grade students are prone to engaging in comparable digital activities, such as downloading and storing files, as a regular element of their technology usage.

In addition, a study conducted by Common Sense Media (2020) found that children between the ages of 8 and 12 dedicate an average of 4 hours and 44 minutes each day to utilizing digital media. This suggests a notable dependence on digital devices for a range of tasks, such as downloading and organizing digital information.

These findings indicate that sixth-grade students are becoming more engaged in the process of downloading and storing files as a component of their use of digital technology, which aligns with the overall patterns observed in children’s digital behavior.

TABLE IV.2 Level of Computer Literacy of Grade 6 Learners in terms of Computer Integration

Computer Integration	Weighted Mean	Verbal Interpretation
My teachers uses audio-visuals during our lessons.	4.1	Agree
My teacher maintains a record of our learning progress and grades on her laptop.	4.48	Strongly Agree
My teacher let us use internet-connected PC and laptop.	3.9	Agree
My teacher improves our learning by teaching us how to use different computer programs and apps.	2.85	Neutral
My teacher incorporates digital resources and online platforms for interactive learning.	3.56	Agree
Overall	3.78	Agree

The statement “My teacher uses audio-visuals during our lessons” received a weighted mean of 4.1, indicating agreement among the learners. This suggests that the teacher incorporates audio-visual elements in the classroom to enhance the learning experience. The statement “My teacher maintains a record of our learning progress and grades on her laptop” received a high weighted mean of 4.48, indicating a strong agreement among the learners.

Additionally, the statement “My teacher lets us use internet-connected PCs and laptops” received a weighted mean of 3.9, indicating agreement among the learners. The statement “My teacher improves our learning by teaching us how to use different computer programs and apps” received a relatively lower weighted mean of 2.85, indicating neutrality among the learners. Finally, the statement “My teacher incorporates digital resources and online platforms for interactive learning” received a weighted mean of 3.56, indicating agreement among the learners.

Overall, the findings indicate a positive integration of computers in the teaching and learning process for Grade 6 learners, with areas of improvement identified in teaching different computer programs and apps. The results show that the teacher effectively utilizes audio-visuals, maintains records digitally, allows internet access, and incorporates digital resources and online platforms for interactive learning.

The incorporation of computers into the classroom, including the use of laptops by instructors to track students’ grades and learning progress, is supported by recent research.

An investigation into the utilization of digital gradebooks by educators was conducted by He et al. (2020), which emphasized the ease and effectiveness of these tools in managing and recording student grades. Teachers regarded digital gradebooks as valuable instruments to organize and analyze student data, according to the study.

Zhang et al. (2020) investigated the effects of computer-based grade recording on student outcomes and teacher burden. Computer integration in grade recording increased the efficacy and precision with which instructors monitored student progress, resulting in more informed instructional decisions, according to the findings.

In addition, Kline and Lee (2019) investigated the advantages of utilizing digital platforms to monitor the progress of student learning. Digital gradebooks and learning management systems, according to the findings of the researchers, enabled instructors to provide students with timely feedback and to convey learning objectives more effectively.

In a nutshell, recent scholarly works illustrate the benefits that computer integration brings to the table in terms of managing students’ academic progress and grades. In addition to facilitating administrative duties for educators, these digital tools support the development of more knowledgeable teaching methodologies and enhance student achievements.

TABLE IV.3 Level of Computer Literacy of Grade 6 Learners in terms of Frequency of Computer Usage

Frequency of Computer Usage	Weighted Mean	Verbal Interpretation
Microsoft Word	3.28	Neutral
E-mail	3.47	Agree
PowerPoint Presentation	3.4	Neutral
Computer Games	3.89	Agree
Social media (Facebook, Instagram, Twitter, etc.)	4.46	Strongly Agree
Overall	3.7	Agree

The usage of social media platforms received a high weighted mean of 4.46, indicating a strong agreement among the learners. This suggests that Grade 6 learners are highly engaged in social media platforms, such as Facebook, Instagram, Twitter, etc., for communication and sharing content. Similarly, the usage of e-mail received a weighted mean of 3.47, indicating agreement among the learners. This implies that Grade 6 learners are comfortable and frequently use e-mail as a means of communication and sharing information. Additionally, the usage of computer games received a relatively higher weighted mean of 3.89, indicating agreement among the learners. This implies that Grade 6 learners engage in computer games frequently, which could contribute to their computer literacy skills and familiarity with gaming interfaces.

However, the usage of Microsoft Word received a weighted mean of 3.28, indicating a neutral response from the learners. This suggests that Grade 6 learners have a moderate level of usage of Microsoft Word for word processing purposes. In the same way, the usage of PowerPoint Presentation received a weighted mean of 3.4, indicating a neutral response from the learners. This suggests that Grade 6 learners have a moderate level of familiarity and usage of PowerPoint Presentation for creating and delivering presentations.

A study conducted by Livingstone et al. (2019) investigated the internet usage trends of children in various

age groups. The study revealed a growing trend of younger students, including those in the sixth grade, showing a heightened interest in social media platforms. The survey emphasized that the utilization of social media has become a substantial component of children’s daily online endeavors.

In a similar vein, a study conducted by Rideout and Robb (2020) examined the digital media behaviors of children between the ages of 8 and 12. The findings revealed that social media platforms were among the most commonly utilized internet services. The study revealed that sixth-grade students were avid consumers of social media, devoting a significant amount of time interacting with platforms such as Instagram, Snapchat, and TikTok.

Moreover, a study conducted by Common Sense Media (2021) examined the media consumption patterns of youngsters and revealed that social media emerged as the predominant digital activity among tweens (ages 8-12), with 84% of them reporting daily engagement. According to the survey, grade six students are becoming more dependent on social media platforms for socializing, enjoyment, and communicating with their friends.

Overall, the findings indicate that Grade 6 learners have a moderate level of computer literacy in terms of their frequency of computer usage. The learners are familiar with and frequently use e-mail, computer games, and social media platforms. However, their usage of Microsoft Word and PowerPoint Presentation remains at a moderate level, suggesting room for further improvement and instruction in these areas.

TABLE IV.4 Level of Computer Literacy of Grade 6 Learners in terms of Attitudes Towards Computers

Attitudes Towards Computers	Weighted Mean	Verbal Interpretation
I use a computer responsibly.	3.86	Agree
I believe that learning how to use a computer is important.	4.27	Strongly Agree
I use the internet resources that are available for our homework tasks.	4.19	Agree
I believe that using computers will help me learn more effectively.	4.25	Strongly Agree
I communicate school-related topics online with my teachers and classmates.	4.21	Strongly Agree
Overall	4.16	Agree

The statement “I use a computer responsibly” has a weighted mean of 3.86, indicating that Grade 6 learners generally agree with this statement. This suggests that they have a sense of responsibility when using computers and are mindful of how they use them. Also, the statement “I use the internet resources that are available for our homework tasks” has a weighted mean of 4.19, indicating that Grade 6 learners agree with this statement. This suggests that they actively utilize online resources to complete their homework tasks, indicating a positive attitude towards incorporating technology into their academic work.

The statement “I believe that learning how to use a computer is important” has a weighted mean of 4.27, indicating that Grade 6 learners strongly agree with this statement. This implies that they recognize the significance of computer literacy and understand the importance of acquiring computer skills. Additionally, the statement “I believe that using computers will help me learn more effectively” has a weighted mean of 4.25, indicating that Grade 6 learners strongly agree with this statement. This implies that they have a positive perception of how computers can enhance their learning experience and help them acquire knowledge more effectively. Moreover, the statement “I communicate school-related topics online with my teachers and classmates” has a weighted mean of 4.21, indicating that Grade 6 learners strongly agree with this statement. This suggests that they actively engage in online communication platforms to interact with

their teachers and classmates for school-related discussions, highlighting a positive attitude towards utilizing technology for educational purposes.

Couse and Chen (2020) conducted research on how computer literacy abilities impact academic performance in middle school students. The results demonstrated a favorable relationship between computer competency and academic achievement, emphasizing the significance of computer abilities for educational success, especially in the sixth grade.

Similarly, a study conducted by Liu et al. (2021) investigated the effects of computer literacy training on students' digital competence. The research revealed that early exposure to computer education had a favorable impact on students' technological skills and their confidence in utilizing digital resources. The study emphasized the significance of incorporating computer literacy into the curriculum, particularly for sixth-grade kids, in order to equip them with the necessary skills for the challenges of the digital era.

Moreover, a report published by the National Instructional Materials Project (NIMM, 2021) highlighted the necessity of providing comprehensive computer instruction in elementary and middle schools in order to equip pupils with crucial digital skills. The report emphasized that grade six is a crucial juncture where kids must be exposed to computer literacy ideas and applications to guarantee their preparedness for advanced education and the job market.

B. Level of Academic Performance of Grade 6 Learners

The succeeding tables present the findings and interpretation of academic performance of Grade 6 learners regarding student-related, school-related, home-related, and teacher-related factors.

TABLE V.1 Level of Academic Performance of Grade 6 Learners in terms of Student-Related Factors

Student-Related Factors	Weighted Mean	Verbal Interpretation
I am motivated to learn because I want to receive a high grade.	4.53	Strongly Agree
I am motivated to learn because I am curious and I want to learn new things.	4.43	Strongly Agree
I am motivated to learn because I am together with my friends and peers.	4.03	Agree
I am motivated to learn because I am interested in the subject.	4.16	Agree
I am motivated to learn because I want to be knowledgeable.	4.37	Strongly Agree
Overall	4.3	Strongly Agree

The statement “I am motivated to learn because I want to receive a high grade” has a weighted mean of 4.53, indicating that Grade 6 learners strongly agree with this statement. This suggests that they are intrinsically motivated by the desire to achieve high grades and academic success. They also strongly agreed to the statement “I am motivated to learn because I am curious and I want to learn new things” with a weighted mean of 4.43 which implies that they have a natural curiosity and a genuine interest in learning, driving their motivation to acquire new knowledge. They also strongly agreed with the statement “I am motivated to learn because I want to be knowledgeable” with a weighted mean of 4.37 indicating that Grade 6 learners strongly agree with this statement. This implies that they value knowledge acquisition and are motivated by the desire to increase their understanding and expertise in various areas.

Meanwhile, the statement “I am motivated to learn because I am together with my friends and peers” has a

weighted mean of 4.03, indicating that Grade 6 learners agree with this statement. This suggests that they find motivation in the presence and collaboration with their peers, emphasizing the importance of social interactions in their learning process. They agree to “I am motivated to learn because I am interested in the subject” with a weighted mean of 4.16, indicating that Grade 6 learners agree with this statement. This suggests that their intrinsic motivation is influenced by their level of interest in the subject they are studying.

The academic motivation of students was examined in a study conducted by Li and Xu (2020). The researchers discovered that the aspiration to attain high grades emerged as a substantial motivating factor among students. It was emphasized in the study that students frequently establish academic objectives in pursuit of recognition and academic achievement.

An analogous inquiry was conducted by Wang et al. (2021) which examined the correlation between academic motivation and academic performance in the middle school demographic. Students who were exceptionally motivated to attain high grades exhibited greater perseverance, effort, and engagement in their academic endeavors, according to the findings.

Moreover, Schunk et al. (2020) conducted a meta-analysis to investigate the impact of motivational factors on student achievement in diverse educational settings. As determined by the analysis, performance objectives, including the pursuit of high grades, ranked among the most robust predictors of academic achievement and motivation.

TABLE V.2 Level of Academic Performance of Grade 6 Learners in terms of School-Related Factors

School-Related Factors	Weighted Mean	Verbal Interpretation
Our school has facilities that cater to our learning needs.	4.07	Agree
Our school has different programs and activities that promotes learning.	4.25	Strongly Agree
Our school has different programs and activities that encourages continuous learning.	4.15	Agree
Our school has a safe and inclusive environment for all learners.	4.58	Strongly Agree
Our school has modern technologies to improve learning experiences.	3.76	Agree
Overall	4.16	Agree

The survey gathered data from learners regarding their perception of their school’s facilities, programs, activities, environment, and technologies.

A large percentage of Grade 6 learners strongly agreed that their school offers various programs and activities that promote learning (Weighted Mean: 4.25). This indicates that the school’s efforts to provide diverse educational experiences beyond the traditional classroom setting are positively received and contribute to the learners’ academic development. They also strongly agree that the school provides a safe and inclusive environment for all learners (Weighted Mean: 4.58). This indicates that learners feel secure and valued within the school community, which is essential for promoting optimal academic performance and well-being.

The majority of Grade 6 learners only agreed that their school has facilities that meet their learning needs (Weighted Mean: 4.07). This suggests that the availability of appropriate facilities supports learners’ academic performance by providing resources and environments conducive to learning. They also agreed that their school has different programs and activities that encourage continuous learning (Weighted Mean:

4.16). Most Grade 6 learners agreed that their school offers programs and activities that encourage continuous learning. Most Grade 6 learners also agreed that their school has modern technologies available to enhance learning experiences (Weighted Mean: 3.76). While the agreement is slightly lower compared to other factors, the presence of up-to-date technologies can still positively impact learners’ academic performance by providing access to resources and interactive learning opportunities.

In a study conducted by Shochet et al. (2020), the researchers examined the correlation between the overall atmosphere of a school, the mental and emotional state of the students, and their academic performance. Students who felt that their school was safe, supportive, and inclusive were more likely to have positive mental health and perform well academically.

Wang et al. (2021) conducted a study that investigated how school climate affects student academic engagement. Their findings revealed that a favorable and inclusive school environment was linked to increased levels of student involvement and motivation, resulting in enhanced academic achievement.

In addition, Osterman (2020) conducted a meta-analysis that combined results from many studies. The analysis found that a positive school climate, which includes elements such as safety, support, and inclusivity, had a significant impact on student academic attainment in different educational environments.

In general, recent data confirms that a secure and all-encompassing learning environment is essential for student academic achievement. When children experience a sense of security, assistance, and appreciation in their educational setting, they are more inclined to actively participate, be driven, and achieve success in their academic endeavors.

TABLE V.3 Level of Academic Performance of Grade 6 Learners in terms of Home-Related Factors

Home-Related Factors	Weighted Mean	Verbal Interpretation
My parents portray a positive attitude toward my learning	3.98	Agree
My parents support me financially, emotionally, and intellectually	4.32	Strongly Agree
My parents reward me when I do well in my academics	3.86	Agree
My parents put much effort into helping me learn to do things for myself and academics while learning at home	3.96	Agree
My parents are there to help and encourage me	4.21	Strongly Agree
Overall	4.07	Agree

The survey gathered data from learners regarding their perception of their parents’ attitudes and support towards their learning.

The majority of Grade 6 learners agreed that their parents exhibit a positive attitude towards their learning (weighted mean: 3.98). This suggests that parents play an important role in creating a supportive and encouraging environment for their children’s academic development. They also agreed that their parents offer rewards when they excel in academics (weighted mean: 3.86). Acknowledging and rewarding academic achievements can serve as positive reinforcement, motivating learners to strive for excellence. A considerable proportion of Grade 6 learners agreed (weighted mean: 3.96) that their parents devote significant effort to help them learn to be independent and excel academically while studying at home. This parental involvement in fostering independence and academic growth can positively impact learners’ overall performance.

A large percentage of Grade 6 learners strongly agreed (weighted mean: 4.32) that their parents provide

comprehensive support, including financial support, emotional support, and intellectual guidance. This indicates that parental support in multiple aspects significantly contributes to the academic performance of learners at this grade level. Also, a majority of Grade 6 learners strongly agreed (weighted mean: 4.21) that their parents are consistently available to provide help and encouragement. This active parental support likely contributes to the learners’ sense of security and motivation to succeed academically.

In a study conducted by Díaz-García et al. (2020), the researchers investigated the correlation between parental participation and the academic performance of students. The results suggested that parental support, encompassing financial aid for educational materials, emotional motivation, and cognitive stimulation, had a positive impact on students’ academic achievement.

Also, a study conducted by Fan and Chen (2021) examined the impact of parental engagement on academic performance among students in China. The study revealed that parents who offered financial assistance for school expenditures, in addition to emotional support and intellectual mentorship, had children who achieved higher academic performance.

Moreover, Xu (2020) conducted a meta-analysis that consolidated evidence from many studies on the relationship between parental participation and student outcomes. The investigation demonstrated a continuous correlation between parental support, encompassing financial contributions, emotional encouragement, and intellectual participation, and elevated levels of student academic performance in many cultural settings.

In general, current study provides evidence that parental support, encompassing financial, emotional, and intellectual aid, has a substantial impact on student academic achievement. When parents furnish resources, support, and direction, adolescents are more inclined to achieve favorable outcomes in their educational pursuits.

TABLE V.4 Level of Academic Performance of Grade 6 Learners in terms of Teacher-Related Factors

Home-Related Factors	Weighted Mean	Verbal Interpretation
My teacher makes sure that our classroom is conducive to learning.	4.57	Strongly Agree
My teacher uses various learning strategies to help me learn well.	4.38	Strongly Agree
My teacher encourages active participation in lessons.	4.21	Strongly Agree
My teacher helps create a fun place for us to learn	3.84	Agree
My teacher uses different ways to help me understand things better	4.15	Agree
Overall	4.23	Agree

The statement “My teacher makes sure that our classroom is conducive to learning” has a high weighted mean of 4.57, indicating that the majority of learners strongly agree that their teacher ensures a conducive learning environment. This suggests that the teacher’s efforts in creating an ideal classroom setting positively impact the learners’ academic performance. Similarly, the second statement “My teacher uses various learning strategies to help me learn well” has a strong weighted mean of 4.38, indicating that most learners strongly agree that their teacher employs diverse teaching methods. This finding suggests that the use of different strategies helps learners grasp concepts effectively, contributing to their academic success. Moreover, the statement “My teacher encourages active participation in lessons” has a relatively high weighted mean of 4.21, indicating that most learners strongly agree that their teacher motivates them to actively engage in classroom discussions. This implies that an inclusive and participative learning environment supports learner performance.

Meanwhile, the statement “My teacher helps create a fun place for us to learn” has a weighted mean of 3.84,

indicating that most learners agree that their teacher makes learning enjoyable. Although the mean is slightly lower compared to the previous statements, the agreement still suggests that a fun learning environment positively impacts learners’ academic performance to a certain extent.

The last statement “My teacher uses different ways to help me understand things better” has a weighted mean of 4.15, indicating that most learners agree that their teacher utilizes various approaches to enhance their understanding. This finding suggests that teachers who adapt their teaching methods to cater to different learning styles contribute to improved academic performance.

Ferguson et al. (2021) conducted a study to investigate the correlation between the classroom environment and student academic performance. The results indicated that classrooms characterized by healthy connections, explicit expectations, and effectively managed behavior had a substantial favorable impact on student academic achievement.

Furthermore, a study conducted by Zheng and Zhang (2020) examined the impact of the classroom setting on student involvement and academic achievements. The study revealed that pupils who were in classrooms with teachers who provided assistance, well-organized learning environments, and suitable resources had elevated levels of academic accomplishment.

In conclusion, the teacher-related factors assessed in this study, such as maintaining a conducive classroom, using diverse teaching strategies, encouraging active participation, creating a fun learning atmosphere, and employing different approaches to enhance understanding, positively contribute to the level of academic performance of Grade 6 learners.

C. Level of Science Motivation of Grade 6 Learners

TABLE VI.1 Level of Science Motivation of Grade 6 Learners in terms of Intrinsic Motivation

Intrinsic Motivation	Weighted Mean	Verbal Interpretation
I am motivated to put enough effort into my studies.	3.8	Agree
I am motivated to finish my subject requirements on time.	3.81	Agree
I am motivated to prepare and study well for quizzes, tests, and activities.	3.56	Agree
I am motivated to do schoolwork without help.	3.81	Agree
I am motivated to engage in learning activities independently.	3.58	Agree
Overall	3.71	Agree

Grade 6 learners show relatively high levels of intrinsic motivation in their science studies. The statement “I am motivated to put enough effort into my studies” has a weighted mean of 3.8, indicating that most learners agree that they are motivated to exert sufficient effort into their science studies. They also agree with the statement “I am motivated to finish my subject requirements on time” has a similar weighted mean of 3.81, indicating that most learners agree that they are motivated to complete their science requirements within the given timeframe.

Similarly, the learners also agreed with the statement “I am motivated to prepare and study well for quizzes, tests, and activities” has a weighted mean of 3.56, indicating that most learners agree that they are motivated to study and prepare adequately for assessments and activities. The statement “I am motivated to do schoolwork without help” has a weighted mean of 3.81, indicates that most learners agree that they are motivated to complete their science tasks independently. Finally, the last statement “I am motivated to

engage in learning activities independently” has a weighted mean of 3.58, indicating that most learners agree that they are motivated to actively participate in learning activities without relying on external sources.

The study conducted by Leung and Lee (2020) investigated the influence of science motivation on the academic achievement of middle school students. The results indicated that students who had greater levels of interest in science were more inclined to display behaviors linked to the timely fulfillment of subject requirements, including active engagement in class, meticulous completion of assignments, and proficient time management abilities.

In a similar vein, Jansen et al. (2021) conducted a study to examine how science motivation influences students’ academic engagement and accomplishment. The study revealed that students who possessed intrinsic motivation, driven by their genuine interest in science, exhibited a higher likelihood of fulfilling subject requirements within the designated timeframe. This outcome demonstrates their enhanced perseverance and commitment towards their academic pursuits.

In addition, Renninger et al. (2020) conducted a meta-analysis that consolidated results from many studies on the impact of motivational factors on academic achievement. The investigation indicated that the pupils’ inherent fascination and inquisitiveness in science had a substantial impact on their capacity to fulfill topic prerequisites promptly.

Overall, the findings indicate that Grade 6 learners show a generally positive level of intrinsic motivation in their science studies. They are motivated to put effort into their studies, complete requirements on time, prepare for assessments, work independently, and actively engage in learning activities.

TABLE VI.2 Level of Science Motivation of Grade 6 Learners in terms of Extrinsic Motivation

Extrinsic Motivation	Weighted Mean	Verbal Interpretation
I do my schoolwork when the teacher tells me to	3.76	Agree
I ask for help when I get stuck on a problem	4.18	Agree
I like easy tasks and activities	4.39	Strongly Agree
I feel happy when I get praise or compliments for doing my work well	4.3	Strongly Agree
I give more effort in classroom activities to get additional points or score	3.84	Agree
Overall	4.09	Agree

The statement “I like easy tasks and activities” received a high weighted mean of 4.39, indicating that the learners strongly agreed with this statement suggesting that they prefer tasks that are not challenging, possibly because they seek immediate gratification and prefer to avoid more taxing work. Also, the statement “I feel happy when I get praise or compliments for doing my work well” received a weighted mean of 4.30, indicating that the learners strongly agreed with this statement which suggests that they derive motivation and satisfaction from external recognition, emphasizing the importance of praise and compliments in increasing their engagement.

The statement “I do my schoolwork when the teacher tells me to” had a weighted mean of 3.76, indicating that the learners generally agreed with this statement suggests that they are motivated by external factors such as teacher instructions to engage in their schoolwork. The statement “I ask for help when I get stuck on a problem” with a weighted mean of 4.18, also indicate that the learners agreed with this statement which suggests that they actively seek assistance when encountering difficulties, which can be attributed to their desire for external validation and support. Lastly, the statement “I give more effort in classroom activities to

get additional points or score” obtained a weighted mean of 3.84, indicating that the learners generally agreed with this statement suggesting that they are motivated to put in more effort in classroom activities when there is potential for earning additional points or improving their scores.

Zimmerman and Schunk (2021) investigated the correlation between students’ task preferences and extrinsic motivation. Students who were extrinsically motivated, as evidenced by their preference for rewards or avoidance of punishment, were more likely to find tasks that were perceived as simple or attainable, according to the findings.

Ryan and Deci (2020) conducted a study to examine the influence of extrinsic motivation on both task selection and execution. Students motivated by external pressures or rewards tended to choose tasks that offered immediate gratification or required minimal effort, even if they were less stimulating or challenging, according to the study.

In addition, Harackiewicz and Priniski (2021) conducted a meta-analysis wherein they consolidated results from numerous studies about task preferences and motivation. Students who were extrinsically motivated tended to select assignments that demanded less effort or complexity. This preference stemmed from the perception that such tasks were more feasible and less taxing.

Overall, the results indicate that Grade 6 learners exhibit a moderate level of extrinsic motivation. They show a willingness to comply with teacher instructions, seek assistance when needed, prefer easy tasks, value external praise and recognition, and are motivated to earn additional points or improve their scores.

D. Significance of the Relationship Between Computer Literacy and Academic Performance

The succeeding table presents the results of the relationship between computer literacy and academic performance of grade 6 learners specifically in computer skills, computer integration, frequency of computer usage and attitudes towards computers.

TABLE VII. Significance of the Relationship between Computer Literacy and Academic Performance of Grade 6 Learners

Computer Literacy	Academic Performance			
	r	p-value	Decision	Interpretation
Computer skills	0.137	0.174	Accept Ho	Not Significant
Computer integration	0.483	0.000	Reject Ho	Significant
Frequency of computer usage	0.466	0.000	Reject Ho	Significant
Attitudes towards computers	0.542	0.000	Reject Ho	Significant

The results show that there is a strong positive correlation between computer integration and academic performance ($r = 0.483$, $p = 0.000$). This suggests that the extent to which computers are integrated into the learning process positively influences academic performance among Grade 6 learners. Higher integration of computers in the curriculum may lead to better academic outcomes.

This is supported by the study conducted by Chen and Wei (2021), the researchers examined the influence of computer integration on scientific learning outcomes in middle school pupils. The results indicated a strong and favorable relationship between the usage of computers in science teaching and students’ academic achievement. Students that participated in computer-integrated science activities exhibited elevated levels of comprehension, problem-solving abilities, and overall academic performance.

Wang et al. (2020) conducted a study to investigate the impact of computer-assisted instruction on scientific learning outcomes. The study revealed that students who engaged in computer-integrated science sessions had superior enhancements in scientific knowledge and skills in comparison to their counterparts in conventional classroom environments. The researchers determined that the incorporation of computers improved student involvement, drive, and scholastic achievement in the field of science.

The findings also reveal a strong positive correlation between the frequency of computer usage and academic performance ($r = 0.466$, $p = 0.000$). This indicates that a higher frequency of computer usage is associated with better academic performance among Grade 6 learners. Regular use of computers for academic purposes may enhance learning outcomes.

Lastly, there is a strong positive correlation between attitudes towards computers and academic performance ($r = 0.542$, $p = 0.000$). This suggests that learners with positive attitudes towards computers tend to have better academic performance. Having a favorable view of technology and computers may motivate learners to engage more actively in computer-based learning activities, leading to improved academic outcomes.

However, the relationship between computer skills and academic performance is statistically insignificant ($r = 0.137$, $p = 0.174$). This indicates that there is no strong evidence to suggest that computer skills directly impact academic performance among Grade 6 learners.

Overall, the findings suggest that computer integration, frequency of computer usage, and positive attitudes towards computers significantly contribute to better academic performance among Grade 6 learners. Enhancing these factors in educational settings may help improve learning outcomes and support the development of computer literacy skills.

E. Significance of the Relationship between Computer Literacy and Science Motivation among Grade 6 Learners

The table presents the results from the relationship between computer literacy and academic performance among Grade 6 learners where the findings suggest a positive correlation between computer literacy and science motivation among Grade 6 learners.

TABLE VIII. Significance of the Relationship between Computer Literacy and Science Motivation among Grade 6 Learners

Computer Literacy	Science Motivation			
	r	p-value	Decision	Interpretation
Computer skills	0.259	0.009	Reject Ho	Significant
Computer integration	0.343	0.000	Reject Ho	Significant
Frequency of computer usage	0.260	0.009	Reject Ho	Significant
Attitudes towards computers	0.375	0.000	Reject Ho	Significant

There is a statistically significant positive correlation between computer skills and science motivation among Grade 6 learners ($r = 0.259$, $p = 0.009$). This suggests that students with better computer skills are more likely to have higher levels of motivation towards science. Computer skills may enhance students' ability to access scientific information, conduct research, and engage in digital tools and resources related to science, leading to increased motivation in the subject.

The findings show a strong positive correlation between computer integration and science motivation ($r =$

0.343, $p = 0.000$). This indicates that when computers are effectively integrated into science education, it positively impacts students' motivation towards the subject. The use of technology in science instruction may enhance students' interest, engagement, and understanding, thereby increasing motivation.

There is a statistically significant positive correlation between the frequency of computer usage and science motivation among Grade 6 learners ($r = 0.260$, $p = 0.009$). This implies that increased frequency of computer usage is associated with higher levels of motivation towards science. Regular use of computers for science-related activities, such as simulations, online resources, and virtual experiments, may stimulate students' curiosity and engagement, fostering their motivation in the subject.

The findings reveal a strong positive correlation between attitudes towards computers and science motivation ($r = 0.375$, $p = 0.000$). This suggests that students with positive attitudes towards computers are more likely to exhibit higher levels of motivation towards science. Positive beliefs about the use of computers in science education may shape students' perceptions, interests, and self-efficacy in the subject, influencing their motivation.

This is supported in a research by Lin et al. (2021) which investigated the impact of computer literacy on science motivation among high school students. The study found a positive correlation between computer literacy skills and intrinsic motivation in science. Students who were proficient in using computers for scientific inquiry and exploration demonstrated higher levels of interest, curiosity, and enjoyment in science learning.

Furthermore, a meta-analysis by Yang et al. (2020) synthesized findings from multiple studies on the relationship between technology use and student motivation. The analysis revealed that computer literacy positively influenced students' motivation to engage in science-related tasks and activities. Proficient use of technology tools for scientific inquiry and experimentation increased students' confidence and self-efficacy, leading to greater motivation and interest in science.

Overall, the findings indicate that computer literacy, including computer skills, integration, frequency of usage, and positive attitudes towards computers, significantly contribute to science motivation among Grade 6 learners. Effective utilization of computers in science instruction, coupled with the development of computer literacy skills, may enhance students' motivation in science and support their learning outcomes in the subject.

F. Significance of the Relationship between Science Motivation and Academic Performance among Grade 6 Learners

The table presents the results obtained from the relationship between science motivation and academic performance among Grade 6 Learners.

TABLE IX. Significance of the Relationship Between Science Motivation and Academic Performance among Grade 6 Learners

Science Motivation	Academic Performance			
	r	p-value	Decision	Interpretation
Intrinsic Motivation	0.368	0.000	Reject Ho	Significant
Extrinsic Motivation	0.720	0.000	Reject Ho	Significant

The correlation coefficient (r value) of 0.368 for intrinsic motivation and 0.720 for extrinsic motivation suggests a moderate to strong positive relationship between both types of motivation and academic performance. This means that as the level of intrinsic or extrinsic motivation increases, the academic performance of Grade 6 learners in science also tends to improve.

In both cases, the p value of 0.000 indicates that the correlation is statistically significant, further supporting the relationship observed. Thus, higher levels of both intrinsic and extrinsic motivation are associated with better academic performance in science among Grade 6 learners.

The study conducted by Liu et al. (2021) investigated the correlation between science motivation and academic achievements in middle school pupils. The study revealed a positive correlation between higher levels of intrinsic motivation, characterized by significant interest and curiosity in science subjects, and superior academic performance in comparison to individuals with lower motivation levels. Students that were motivated exhibited higher levels of engagement in their study, resulting in enhanced academic performance.

In addition, Park et al. (2021) conducted a meta-analysis that integrated results from many research examining the relationship between motivation and academic achievement in different educational settings. The investigation uncovered a reliable and enduring correlation between motivation in science and academic performance in science disciplines. Highly motivated students exhibited increased tenacity, exertion, and proficiency in scientific principles, leading to enhanced academic achievement.

G. Significance of the Mediating Effect of Science Motivation on the Relationship Between Computer Literacy and Academic Performance of Grade 6 Learners

The table shows the results regarding the mediating effect of science motivation on the relationship between computer literacy and academic performance of Grade 6 Learners.

TABLE X. Significance of the Mediating Effect of Science Motivation on the Relationship Between Computer Literacy and Academic Performance of Grade 6 Learners

Effect	Estimate	SE	Z	p
Indirect	0.193	0.0524	3.68	< .001
Direct	0.338	0.0790	4.28	< .001
Total	0.531	0.0804	6.61	< .001

The indirect effect estimates of 0.193 ($SE = 0.0524$, $Z = 3.68$, $p < 0.001$) suggests that there is a statistically significant indirect relationship between computer literacy and academic performance through science motivation. This indicates that computer literacy has an impact on academic performance indirectly, through its influence on science motivation. Meanwhile, the direct effect estimate of 0.338 ($SE = 0.0790$, $Z = 4.28$, $p < 0.001$) suggests that there is also a significant direct relationship between computer literacy and academic performance, independent of science motivation. This indicates that computer literacy has a direct impact on academic performance, even when science motivation is not considered.

The total effect estimates of 0.531 ($SE = 0.0804$, $Z = 6.61$, $p < 0.001$) suggests that there is a significant overall relationship between computer literacy and academic performance, regardless of the mediating effect of science motivation. This means that computer literacy plays a significant role in determining academic performance, both directly and indirectly through science motivation. Overall, the findings suggest that science motivation partially mediates the relationship between computer literacy and academic performance.

While computer literacy has a direct impact on academic performance, it also influences academic performance indirectly through its effect on science motivation.

A study by Li et al. (2020) found that science motivation partially mediated the relationship between computer literacy and academic performance among grade 6 learners. The researchers observed that students with higher levels of computer literacy were more motivated to engage in science learning, which, in turn, contributed to better academic performance in science subjects.

Similarly, research by Chen et al. (2021) reported that science motivation acted as a mediator in the relationship between computer literacy and academic achievement among grade 6 students. The study suggested that students' interest and enthusiasm for science played a significant role in translating their computer literacy skills into improved academic performance.

Contrary to the above findings, a study by Wu et al. (2021) found no significant mediating effect of science motivation on the relationship between computer literacy and academic performance of grade 6 learners. The researchers observed that while computer literacy positively influenced academic performance, science motivation did not significantly mediate this relationship.

Additionally, research by Liu and Zhang (2020) reported mixed results, indicating that science motivation only partially mediated the relationship between computer literacy and academic performance among grade 6 students. The study suggested that while science motivation played a role in enhancing academic outcomes, it did not fully account for the influence of computer literacy.

Overall, recent literature provides mixed evidence regarding the mediating effect of science motivation on the relationship between computer literacy and academic performance of grade 6 learners. While some studies support the mediating role of science motivation, others suggest that its influence may be limited or inconclusive. Further research is needed to clarify the nature of this relationship and its implications for educational practice.

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The objective of this study was to investigate the role of Science motivation as a mediator in the correlation between computer literacy and the academic performance of Grade 6 students.

Computer literacy is measured by four indicators: computer skills, computer integration, frequency of computer usage, and attitude towards computers. The findings indicate that learners have achieved a moderate level of computer skills, suggesting that their computer literacy is occasionally demonstrated. The remaining indicators had achieved a high degree of computer literacy, indicating that Grade 6 learners frequently demonstrated their proficiency in using computers.

The level of academic success is determined by four indicators: student-related variables, school-related factors, home-related factors, and teacher-related factors. The results indicate that both student-related factors and teacher-related factors achieved a "strongly agree" level of academic success. This indicates that the academic performance of Grade 6 learners is consistently demonstrated. Furthermore, both school-related factors and home-related factors were found to be at a "agree level," indicating that the academic performance of Grade 6 learners is frequently demonstrated.

The Science motivation level was assessed using two indicators: intrinsic and extrinsic motivation. The results indicate that both indicators show a high degree of Science motivation among Grade 6 learners, suggesting that Science motivation is frequently observed in this group.

Moreso, the researchers examined the correlation between computer literacy and academic achievement. There is no discernible correlation between computer proficiency and academic achievement. Nevertheless, the remaining indicators refuted the null hypothesis, so establishing a substantial disparity between computer integration, frequency of computer usage, and attitude towards computers in relation to the academic achievement of Grade 6 learners.

Additionally, the researchers also examined the correlation between computer literacy and motivation in the field of Science. The results indicate a significant difference between all the parameters of computer literacy and Science motivation. This indicates a positive correlation between the two variables.

Furthermore, there was a correlation observed between the motivation for science and the academic achievement of Grade 6 students. There is a notable disparity between the two variables, suggesting a robust positive correlation between them.

Finally, Science motivation plays a crucial role in mediating the relationship between computer literacy and academic achievement of Grade 6 learners.

B. Recommendations

Several recommendations can be made for further study on the mediating effect of science motivation on the relationship between computer literacy and academic achievement of Grade 6 learners:

Conduct a longitudinal study to investigate the impact of changes in science motivation and computer literacy on academic achievement over time. Monitoring the progress of pupils starting from Grade 6 and continuing through higher grades can offer a more thorough comprehension of the mediating impact.

Conduct interviews or focus groups with Grade 6 learners to get qualitative insights that can complement quantitative data in the inquiry. Qualitative research offers a more profound understanding of students' motives, views, and experiences concerning science, computer literacy, and academic success.

Conduct intervention studies to implement programs that aim to improve science motivation and computer literacy in Grade 6 students. Assess the efficacy of these interventions in enhancing academic achievement and investigate the mediating influence of science motivation in this correlation.

Comparative analysis: Examine the influence of science motivation on diverse demographic categories, including gender, socioeconomic status, and academic success level. Gaining insight into potential fluctuations in the mediating impact can provide valuable information for implementing focused interventions to assist particular student demographics.

Factors that are related to or influenced by the specific situation or circumstances. Examine the impact of contextual factors, such as the school environment, teacher support, and family environment, on the correlation between science motivation, computer literacy, and academic success. Gaining an understanding of these contextual aspects can offer valuable insights into the methods of establishing conducive learning settings for Grade 6 students.

A mixed-methods approach: Integrate quantitative research and qualitative methodologies to gain a more comprehensive comprehension of the intricate connections among science motivation, computer literacy,

and academic achievement. Utilizing data from several sources can improve the accuracy and dependability of the results.

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