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# Empowering Educational Equity: The Impact of PASS on Student Achievement in Schools Academically Challenged in Trinidad and Tobago

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**Abstract:** This research examines the intervention program, "Preparing All Students for Success" (PASS). Implemented across thirty-six cohorts in eight primary schools—specifically those underachieving and academically monitored—it targeted the La Brea constituency and adjacent locales. The Trinidad Offshore Fabricators Unlimited (TOFCO) launched the program, as cited, in 2018, with a focus on the rural school district of St. Patrick. The intervention to foster improved academic achievement from 2019 through 2024, spanning five school years: 2019-2020, 2020-2021, 2021-2022, 2022-2023, and 2023-2024.23-2025. Continuous Professional Development (CPD) for educators, increased parent participation, and educational support for at-risk students were all key components of this approach. The PASS initiative aimed primarily to level the playing field for students facing educational disadvantages, equipping them with resources for academic success within a supportive and inclusive environment. The study employed a quantitative methodology; Analysis of Variance (ANOVA) results demonstrated significant gains in literacy and numeracy among students. It is worth noting that PASS led to an impressive 80%-90% increase in student performance—a testament to its overall effectiveness. The Secondary Entrance Assessment (SEA) data, from 2019 to 2024, showed consistent yearly progress. Repeated Measures ANOVA revealed a statistically significant overall effect on school performance, with a p-value of 0.04, confirming that these improvements weren't due to

random chance. Furthermore, subject-specific gains were observed in English Language Arts (ELA), yielding a p-value of 0.02—further evidence of PASS's positive impact. These findings underscore PASS's critical role in shaping Trinidad and Tobago's educational landscape. Targeted interventions, it seems, can facilitate meaningful, long-term improvements in student achievement. The success of PASS also offers insights for other educational initiatives aimed at similar shortcomings in other areas, thereby highlighting the need for careful evaluation and potential adaptation of comparable frameworks to boost educational equity across various settings.

**Keywords:** Secondary-Entrance-Assessment, Trinidad-Offshore-Fabricators-Unlimited (TOFCO), standardized testing, ANOVA, Preparing-All-Students-for-Success (PASS).

## Introduction

In Trinidad and Tobago, primary schools are key institutions for children's primary education, occupying a position between pre-school and secondary school. The Education Act (Chapter 39:01), established in 1966, serves as the legal base for the country's education system (Esnard, 2022). Interestingly, this Act underwent revisions in February 2023, granting the Ministry of Education the authority to advertise and manage the education system, thereby enhancing its operations. Additionally, the updated amendment now includes special education services, demonstrating a commitment to improved educational access and outcomes. The Act primarily aims to improve education by mandating nine years of compulsory schooling—seven years of primary and two of secondary—completely free at both state primary and secondary levels. Currently, the Ministry of Education of Trinidad and Tobago (MOETT) oversees 481 public primary schools and 133 secondary institutions. Primary education starts at age five, lasting seven years, ending with Standard 5 students taking the Secondary Entrance Assessment (SEA). This test determines secondary placement. As outlined in the updated Education Act, Chap. 39:01, the policy reflects a desire for a modern, high-quality education system, with a key focus on educational equity, which is a relevant topic today (Ministry of Education 2023-2027, 2023); Levinson, Geron & Brighouse (2022). However, persistent resource allocation inequality can hinder access to basic educational necessities, which can negatively affect cognitive and social development for many students. In response, the Preparing All Students for Success (PASS) initiative, launched in 2018, pushes for strong support to involve all students in education, particularly those from disadvantaged backgrounds, such as the La Brea community (Gavigan & Kurtts, 2010). During a term as Member of Parliament for La Brea (2015-2020), data showed that in 2018, 16 of 26 schools in the region were underperforming, with over 50% of students scoring under 30% on the SEA (Parliament.org, pp. 209-210, 2019). The analysis identified school management problems, under-trained teachers, absenteeism, and a lack of parental support. This investigation is set to examine effects related to the unequal application of the PASS initiative, potentially revealing issues that extend beyond education. This research looks not only to add to the academic conversation about educational equity but also to help educators and policymakers create equal opportunities for all students (Allen & Hutton, 2023). It acknowledges that educational inequality can reinforce social injustices. This research studies data about diverse student needs, building an understanding of their implications for society.

### *Research Problem*

A review of statistics compiled in 2018 by the MP for La Brea—covering 2015-2020—indicated that sixty per cent of the constituency's primary schools weren't adequately setting up students for secondary school success (parliament.org, pp. 209-210). Consequently, the MOETT put these schools on “Academic Watch.” (Brown, 2002). The reason being that an alarming number – fifty per cent or more – of standard five students consistently scored below thirty per cent on the SEA exams between 2016 and

2018. Digging deeper, these struggling schools often lacked vital leadership and governance support, something crucial for good educational results. Teachers had a tough time getting through the SEA curriculum and struggled to support diverse learners at risk of failing, especially in inclusive classrooms. Absenteeism and truancy were also high among these students, often linked to a lack of parental support. (Fan & Chen, 2001). Unfortunately, opportunities to bridge the educational gaps were scarce, which didn't help. These ongoing issues highlight the need to examine systemic barriers causing educational inequity, as others have found. This inequity, unfortunately, continues to hurt students' chances, particularly in under-resourced areas (Gavigan & Kurtts, 2010; Levinson, Geron & Brighouse, 2022). Therefore, looking at these factors is key to crafting strategies that target educational disparities in this constituency and elsewhere; similar studies show this (Center for Research et al., 2021), (Council A for Research et al., 2022).

***Research Focus***

The research primarily seeks to refine the academic environment in schools so that, ideally, half the students can meet the benchmarks set by the Secondary Entrance Assessment (SEA) Frameworks (2019-2024). Consequently, the overarching goal was to prepare students for a seamless transition into secondary schools or Form 1 through the PASS initiative, designed to foster an equitable and inclusive educational setting. This project also focused on equipping teachers to effectively deliver standards-based instruction, thereby highlighting their role in student academic success after professional development. Moreover, the research underscores how significant parental involvement is within collaborative learning environments for student learning, something quite crucial for nurturing community support (Fan & Chen, 2001). Strategies aligning with pedagogical improvements are vital, particularly given the current educational hurdles, such as those exacerbated by the COVID-19 pandemic, which demanded a profound re-evaluation of teaching methods for better educational results (Daniel, 2020). Thus, incorporating varied teaching strategies grounded in real-world research helps ensure inclusivity, tackling the unique requirements of different student groups and breaking down obstacles to academic achievement, generally speaking (Sujatha & Vinayakan, 2023).

***Research Aims***

This research aimed at empowering schools to prepare fifty percent or more of their students for successful entry into secondary school. To do this, the teachers and administrators needed to engage in Continuous Professional Development (CPD). CPD for educators involves a well-thought-out plan intended to improve students' core skills—English Language Arts – comprehension skills, writing, and mathematics—for both current and previous groups of learners. This initiative, in most cases, supports the SEA Framework for 2019-2024 and aims to prepare educators for implementing the Trinidad and Tobago Ministry of Education's curriculum, with particular attention to the Curriculum Guides for Standards 3-5 (MOETT, 2013). Assessing students' diverse needs throughout their learning is central to this approach; it's tailored to meet individual requirements (Dwivedi et al., 2023), acknowledging that educational equity remains imperative in contemporary society (Levinson, Geron & Brighouse, 2022). Moreover, identifying and accommodating special needs is emphasized to foster inclusivity, ensuring equal opportunities for success. As such, it is evident that the endeavor seeks not only to enhance academic outcomes but to create equitable educational pathways. These paths, in turn, contribute to the holistic development and well-being of each student (Nobis, 2025). This multifaceted approach to educator development and student support – and it's worth reiterating that – is critical for fostering an inclusive educational atmosphere, one that responds to the diverse needs of the student population and lays the groundwork for sustainable academic success (G N et al., 2025).

### *Research Questions*

The question arises:

- In what specific ways does the PASS program help primary schools prepare their students for the transition to secondary school?
- How does PASS shape the magnitude of changes in literacy, numeracy and overall learning, particularly in schools located in the La Brea constituency, given the context of existing educational inequities within Trinidad and Tobago?

## Literature Review

Identifying weak areas is essential in this review to highlight where the PASS intervention program needs more emphasis. The aim is that these areas will point to the additional research needed to improve the PASS program, ultimately leading to better learning outcomes. Current literature suggests a specific method to address these gaps adequately. For example, evidence suggests that teaching concepts like the PASS program can be significantly enhanced through problem-solving methods in teaching content, and through online engagement strategies that facilitate deeper learning (Rapanta et al., 2020; Chang et al., 2024). Therefore, these gaps call for additional empirical study to see how enhancements can add to educational frameworks focused on practical learning outcomes within the PASS program context (Prather et al., 2023). This exploration aligns with the broader conversation about integrating innovative teaching strategies in different educational settings. It reinforces the importance of systematic evaluation of interventions designed to boost student engagement and success.

### *Standardized tests*

Standardized tests are fundamental to collecting and quantitatively analyzing educational data. This data, in most cases, assists schools in benchmarking their students' educational outcomes, using a sample utilized during the standardization process (Dalal & Gunderman, 2011). The percentage of students who pass their state's standardized achievement test has, arguably, evolved into a universal indicator of educational success. It serves as the definitive measure for determining winners and losers across students, schools, districts, and even states (Hursh, 2005). To ascertain success and failure beyond the individual student, test scores are aggregated or averaged across various educational levels. These scores often have repercussions for teachers, schools, and districts (Hursh, 2005). For instance, in Trinidad and Tobago, the Secondary Entrance Assessment (SEA) is a critical standardized test; this facilitates the transition from primary to secondary school (SEA Framework, 2019 – 2024; 2025-2028). Significantly, the results from this test are instrumental for school administrators, helping them identify teachers who may need additional training. Classes that fail to meet state standards may indicate a need for professional development.

Furthermore, students' test scores can guide teachers in addressing specific knowledge or achievement gaps. Understanding where students encounter challenges allows educators to refine the curriculum to meet student needs. Standardized exams facilitate meaningful comparisons across districts, maintaining educational standards nationwide (Hursh, 2005). Notably, the MOETT holds schools accountable for student success. Ultimately, they determine if a school needs additional district assistance, underscoring the pivotal role of standardized tests in shaping educational policy and practice within the education system. (Cunningham, 2021).

### *Professional Development (PD)*

Professional Development, or PD, covers learning beyond typical undergraduate and postgraduate studies. PD helps educators stay up to date on good teaching methods, and it also helps them improve their skills and knowledge. It has been said that teacher PD is essential for improving classrooms, schools, and, most importantly, student learning (Brown, & Militello, 2016). Research shows that there is a strong connection between how good a teacher is and how well students do, which makes teacher quality a significant factor in schools. Some studies show that when teachers get in-service training, students tend to perform better (Asiyai, 2016). While professional learning usually happens in structured ways, like professional development programs or mentorships, teachers also learn a lot from each other. Things like peer teaching or planning together can be great for professional growth. According to King (King, 2016), context-specific professional learning is very effective in reshaping classroom practices. Also, there's pretty good evidence that PD works best when it focuses on the teacher's specific subject (King, 2016). Now, consider Trinidad and Tobago, where they introduced a new curriculum in primary schools in 2013-2014; however, even now, some teachers still don't want to implement it. A common complaint is that they didn't get enough professional development to use the curriculum well.

Many teachers also report that they weren't adequately trained in how to differentiate instruction, assess students, and utilize technology in a way that integrates themes (Mathura, 2019). The initiative known as PASS concentrates on job-embedded teacher PD that is sustained and contextually relevant. Rather than emphasizing workshops, this review will focus on workplace learning through exchanges among teachers. PASS sees schools as key environments for professional development. Ideally, PD should be job-embedded, contextualized, and carried out over time, both in formal programs and informal chats. This approach values subject-specific training and aims to create strong teacher communities focused on boosting student success. Continual professional development requires careful self-reflection related to academic expertise, engagement approaches, and the incorporation of forward-looking techniques consistent with expectations in industry and higher education.

***Assessment***

Assessment plays a vital role in education. Its function is to enhance professionalism and effectiveness in learning environments. Educators gain critical insights that allow them to strategically design instruction suited to students' contexts while supporting developmental pathways. As Darling-Hammond (2015) suggests, practical assessment serves as the backbone for aligning teaching with student needs and goals. Yan and Cheng (2015) substantiate this alignment. In their systematic review, they demonstrate that assessment is a multifaceted tool in educational settings, functioning formatively and summatively. Therefore, a holistic understanding of assessment roles is indispensable in building responsive and productive educational environments. Indeed, as education stakeholders increasingly advocate for authentic assessments that reflect student pathways (Thibault, 2020; Fallar et al., 2020), these understanding gains urgency. Recognizing learning styles and addressing challenges is crucial for an equitable learning environment. Teaching strategies should accommodate diverse preferences through visual aids, hands-on activities, and collaborative projects. Formative evaluations serve to gauge understanding and empower teachers to adapt. Mentoring programs can offer individualized support; Wilson-Ahlstrom et al. (2011) highlight the importance of tailored mentoring relationships.

Furthermore, resources such as Pelco (2018) emphasize peer mentoring programs to promote progress and engagement. Collectively, these approaches provide a framework for addressing learning difficulties. By equipping students with necessary tools, they illustrate the need for nuanced assessment strategies that align with learner profiles (Thornburgh et al., 2024), (Center for Research SS et al., 2021).

### *Absenteeism*

High absenteeism tends to correlate with a decline in academic performance, with a significant knock-on effect on student grades and their wider educational experience. Research suggests a clear trend: the more classes a student misses, the more their performance suffers; this is often because crucial classroom learning is difficult to replicate alone (Notar et al., 2022). As highlighted by Jason A. Schoeneberger in "Longitudinal Attendance Patterns", high absenteeism might also lead to students dropping out of school altogether. This, in turn, creates a problematic cycle of underachievement that, in most cases, can continue into adulthood and negatively impact future life chances (Schoeneberger, 2012). The implications extend beyond individual academic achievement. Classroom dynamics can also be affected; students who are frequently absent can disrupt their progress as well as that of their peers, leading to a less effective learning environment for everyone (Gregory et al., 2022). Indifference and alienation from the school environment also seem to increase with absenteeism. This intensifies the likelihood of mental health issues and contributes to the concerning increase in the school-to-prison pipeline within underprivileged communities (Berrocoso et al., 2020). Consequently, as these studies show, tackling absenteeism is important for improving academic results, notably in contexts that are increasingly marked by social and emotional difficulties (Bammou et al., 2024).

### *Impact of COVID-19*

The COVID-19 pandemic brought about a significant disruption to education, throwing a wrench into how students learned and accessed online tools. This situation, as noted by Donohue and Miller (2020), amplified the digital divide across different communities. The impact was particularly noticeable in schools already struggling, where many students were at risk even before the pandemic (Dwivedi et al., 2021). When schools switched to remote learning unexpectedly, it became clear that many teachers weren't ready. Many lacked trainings in how to teach online, and many schools didn't have the tech they needed. These issues hindered student performance during this tough time, especially for those already at a disadvantage (Koohang et al., 2023). This crisis has widened the education gap and highlights the necessity to support vulnerable students. It also shows how crucial it is to keep education going, even when things are difficult (Dwivedi et al., 2021).

### *Diversity/Inclusivity/Equality*

To truly make a difference in schools, teachers must address the wide-ranging requirements of learners. This involves weaving equity, diversity, and inclusivity into the curriculum. It's more than just making space for inclusive learning; it's also about boosting teacher skills. Teachers need to be able to support students from all sorts of backgrounds and tackle the inequalities that can sneak into traditional education (Dwivedi, et al., 2023). Research, as it stands, points to the fact that well-designed professional development helps teachers grasp and use inclusive teaching methods better. Moreover, that's key to meeting everyone's needs and pushing for fairness in education. Now, when curriculum design is built on values like equity and inclusivity, studies show it makes an atmosphere where every student feels appreciated and backed, which helps them get more involved academically and socially (c.f. (Center for Equity for Learners, 2022). Implementing professional development that hones in on culturally relevant teaching means educators can better meet the diverse needs of their learners, whether those needs are linguistic, emotional, or educational. This is how we can close the achievement gaps that have kept some groups on the sidelines in the past. This, in effect, underscores the idea that inclusive education is critical for developing every student's potential and for guaranteeing fair access to a good education.

### *Integrating Technology*

The incorporation of technology into the educational framework offers considerable potential to boost student participation and, consequently, academic results. The COVID-19 pandemic exposed the unpreparedness of many educators in Trinidad and Tobago — a situation echoed worldwide — when they were suddenly required to teach online. This underscored a pressing need for support to enable the effective use of educational technology, which is crucial for better learning (Mallik et al., 2024; Siemens & Baker, 2014). Indeed, tools like virtual reality (VR) hold the key to transforming how we teach. Evidence suggests immersive tech environments may substantially improve how students learn and retain information, making education more interactive. Furthermore, as our society increasingly embraces digital tools, educators must develop the necessary skills to equip students for the demands of tomorrow (Chang et al., 2024). Addressing teachers' technological capabilities must, therefore, remain a priority, so all students can leverage advancements in educational tech to maximize their potential.

### *Online Teaching*

Language teachers in Thai universities faced various experiences and challenges when emergency online instruction was implemented. Studies have examined these difficulties, focusing on key areas where teachers struggled and identifying their needs for professional development in future online teaching environments (Jones et al., 2013). The research underscores that building teacher self-efficacy—specifically in technology integration—is critically important within teacher preparation programs. This ensures that future teachers can be effective in digital learning environments (Williams et al., 2023). Enhancing educators' self-confidence with technology can lead to more effective teaching, adapting to modern educational needs and positively affecting learners, especially as education incorporates blended and online models (Thibault, 2020). As Usher et al. (2023) highlighted, educators who struggle with online teaching often need specific support to transition to effective online teaching and ensure students remain engaged and meet learning outcomes. It is also worth noting that the widespread use of online learning during the pandemic required adapting teaching methods and maintaining student-teacher interaction, which is critical for positive educational experiences during emergency remote teaching (Giltenane et al., 2023). We should also consider that, similar to nursing education programs where technology barriers surfaced, addressing these issues via professional development is vital for ensuring effective digital teaching and learning (Chengoden et al., 2023).

## Materials and Methods

Pre-/Post-data from the Secondary Entrance Assessment (SEA) was used to determine the success or failure of schools. In many educational studies, a common approach involves before-and-after evaluations to gauge the impact of an intervention (Murray et al., 2019). The PASS research, similarly, uses this method. This approach includes a detailed evaluation of the Secondary Entrance Assessment (SEA) results, which are seen as a key tool for understanding student achievement levels. Data from standardised assessments are generally viewed as reliable and relevant for measuring educational outcome effectiveness, a view backed by research (Fox et al., 2020). The current study specifically focuses on aspects of the assessment data to highlight potential disparities in educational equity. By examining variations in SEA results across past and present cohort groups, the research highlights systemic challenges that can influence academic performance differences, underscoring the need for targeted strategies to address inequities faced by certain student groups. This focus is consistent with recent findings that emphasise how socioeconomic status affects educational opportunities, promoting a deeper understanding of the barriers to equality in educational access and outcomes (Lavadenz et al., 2021). The methodology, therefore, not only includes assessment metrics but also integrates qualitative insights to provide a comprehensive evaluation framework.

***Sample and Participants***

The study involved eighteen cohort groups in eight educational institutions, and for clarity, these were put into specific periods. Group 1 covers two periods: (i) the time before COVID, specifically September 2nd, 2019, to March 22nd, 2020, and during COVID-19 lockdown, March 22nd, 202,0, to April 19th, 2022 (Kalloo, Mitchell & Kamalodeen, 2020). (ii) a later session, September 2021 to April 2022. Group 2 includes (iii) July 2022 to July 2023, plus (iv) the current period from July 2023 to July 2024. This division helps make sense of how education changed during and after the pandemic, especially since new technologies – Large Language Models (LLMs) - are reshaping educational approaches (Chang et al., 2024). Participants from Group 1 schools are detailed in Table 1, giving insight into the background of the study's conclusions. These groups are systematically analysed to tackle some important questions about fairness and access in education, which have become ever more relevant with rapid technology advancements in educational tools (Prather et al., 2023).

**Table 1**

*PASS 16 Cohort groups in 7 schools*

| PASS-1 SCHOOLS (July 2019-March 2020)(March 2020 – June 2020)[1] | | |
|---|---|---|
| VANCE RIVER R.C. | Principal | Cohort Groups |
| **Ms. R. Diaz-Jackson** | **Ms. A. Forteau** | 4 groups |
| **Ms. A. Hospedales-Julien**<br>**Ms. J. Bartholomew**<br>**Ms. A. Etiennie** | | |
| LA BREA RC | **Mr. L. Charles** | 3 cohort groups |
| **Ms. S. Jaglal** | | |
| **Ms. K. Bedeau** | | |
| **Ms. S. Liebert** | | |
| BRIGHTON AC | **Mr. S.Suite** | 2 cohort groups |
| **Ms Rennie Mitchell(deceased)** | | |
| **Ms. Gore** | | |
| GUAPO GOVERNMENT | **Ms. M. Nandlal** | 1 cohort group |
| **Mr. Reid** | | |
| PASS-2 SCHOOLS (July 2020-June 2021; July 2021-April 2022…July 2022) | | |
| ERIN RC | **Ms. S. Richards** | 1 cohort group |
| **Mr. L Stewart** | | |
| EGYPT GOVERNMENT | **Ms. J. Gabriel-Neptune** | 4 cohort groups |
| **Ms. G. Frederick** | | |
| **Ms. D. Morris** | | |
| **Ms. A. Harper** | | |
| **Ms. O. Seerattan** | | |
| SALAZAR GOVERNMENT | **Mr. D. Seeram** | 1 cohort group |
| **Ms. S. Mahabir** | | |

**Table 1 (continued)**

[1] Source prepared by Y. John, 2025

*Group 2 Participants -Schools 2021 – 2024*

| PASS-3 SCHOOLS (2021-2022) | | |
|---|---|---|
| EGYPT GOVERNMENT PRIMARY | Ms. J. Gabriel-Neptune, Principal | Cohort Grouping |
| **Ms. A. Caesar**<br>**Ms. T. Rojas**<br>**Ms. R. Julien**<br>**Ms. S. Quashie** | | 4 |
| **ERIN R.C.** | | |
| **Ms. J. Riley, Senior Teacher** | Ms. S. Richards, Ag. Principal | 1 |
| GUAPO GOVERNMENT | | |
| **Ms. K. Fabien, Teacher** | Ms. M. Nandlal, Principal | 2 |
| **Mr. B. Davis, Teacher** | | |
| SALAZAR GOVERNMENT | | |
| **Ms. C. Mahabir, Teacher** | Mr. D. Seeram, Ag. Principal | 1 |
| SANTA FLORA A.C. | | |
| **Ms. Cindy Noel, Teacher** | Mr. S. Whiteman, Ag. Principal | 1 |

| **PASS-4 SCHOOLS (2022-23)** | | |
|---|---|---|
| **ERIN RC** | Ms. S. Richards, Ag. Principal | |
| Ms. J Riley | | 1 |
| **GUAPO GOVERNMENT** | Ms. R. Nandlal, Principal | |
| Ms. K Fabien | | 1 |
| **VANCE RIVER RC - Teachers** | Ms. A. Forteau, Ag. Principal | 4 |
| Ms. A. Hospedales-Julien | | |
| Ms. J Bartholomew | | |
| Ms. A Etienne | | |
| Ms. R. Diaz-Jackson | | |
| **PASS-5 SCHOOLS (2023-2024)** | | |
| **ERIN R.C.** | Ms. S. Richards, Principal | 1 |
| Ms. J Jones | | |
| **GUAPO GOVERNMENT** | Ms. R. Nandlal, Principal | 1 |
| Ms. K Fabien | | |
| **VANCE RC** | Ms. A. Forteau, Principal | 3 |
| Ms. A. Hospedales-Julien | | |
| Ms. J Bartholomew | | |
| Ms. A Etienne | | |

***Key Personnel by Institution***

Table 1 reflects the key roles of the personnel at the institutions. The cohort groups represent the present students grouped by their teachers. In total, there are thirty-six cohort groups in eight institutions, and the PASS intervention program was administered to each of the cohort groups separately as scheduled.

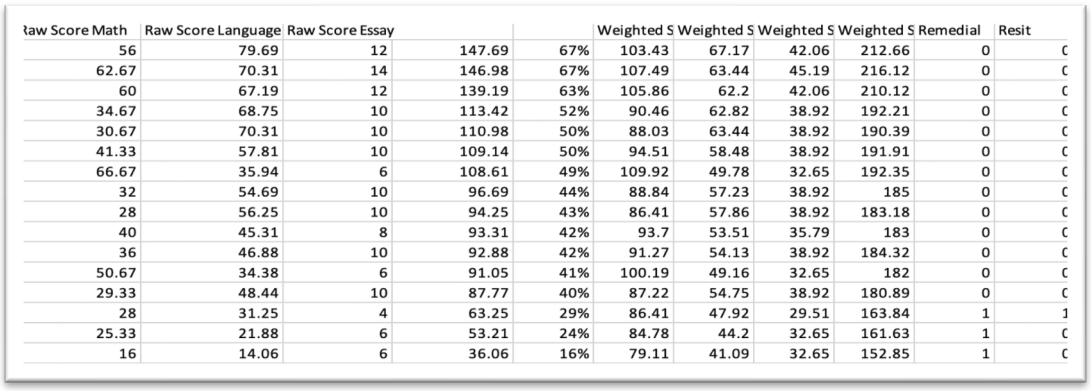
In most cases, this reflects the broader challenges in educational institutions, where a clarity of roles/responsibilities remains crucial for institutional effectiveness and, of course, student success. Educational equity is a pressing concern today, and, as such, aligning the roles of key personnel within institutions is central to addressing the disparities, which showcases a commitment to high standards in education. Furthermore, evaluations of the performance and impact of these teacher leaders could reveal critical insights for fostering a thriving academic environment, one that doesn't perpetuate inequality, especially because varied outcomes continue to emerge based on socioeconomic contexts.

***Instrument and Procedure***

Collecting data from school principals required a thorough examination of score sheets. The sheets that were examined consist of results from the cohort groups from the previous year (SEA20xx), before the intervention, and from the current cohort groups, the year following implementation (SEA20xx +1). The following sheets serve as examples of some relevant data analysed from the SEA results: Raw Score Math, Raw Score ELA, Raw Score Writing, Raw Score Total, Weighted Score Math, Weighted Score ELA, Weighted Score Writing, Total Weighted Score, Remedial (Remedial= 1), Resit for SEA (1 = Resit).

**Figure 1**

*Snapshot of Score Sheet Examined Before and After the Exams for Cohort Groups2*



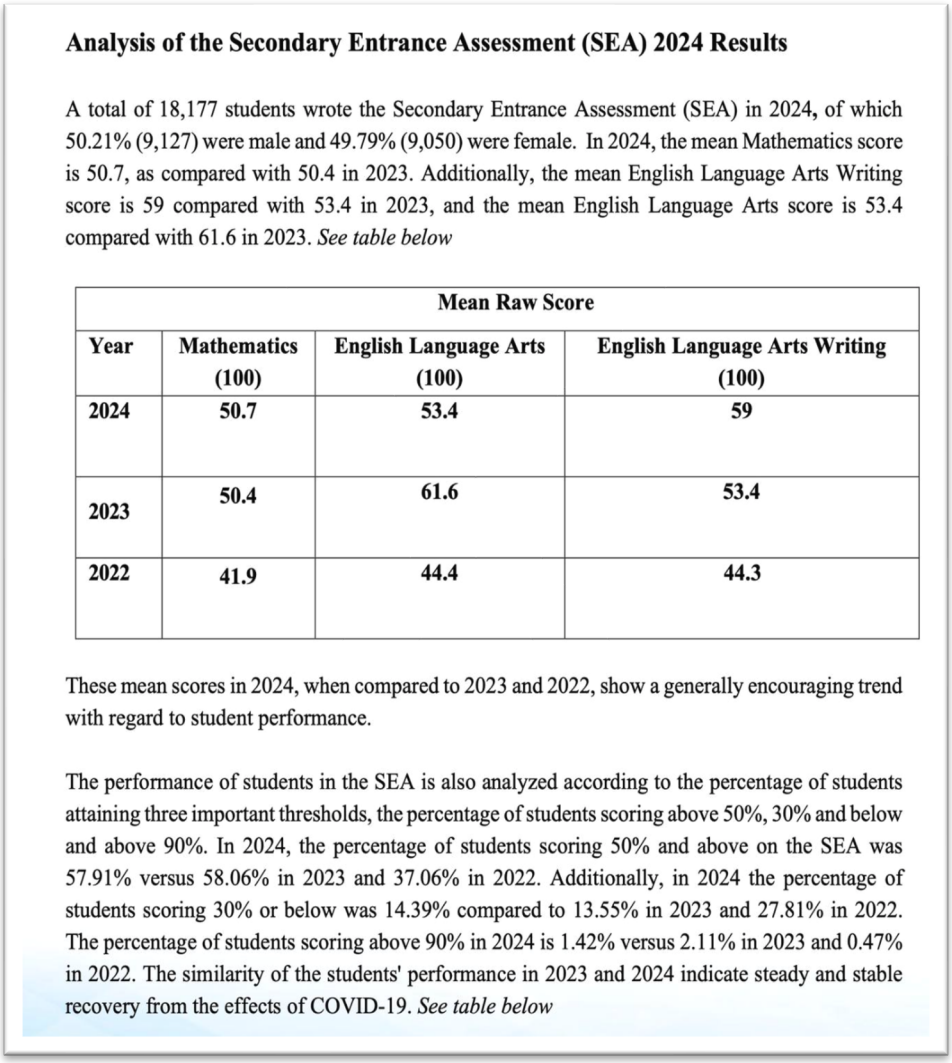
| aw Score Math | Raw Score Language | Raw Score Essay | | | Weighted S | Weighted S | Weighted S | Weighted S | Remedial | Resit |
|---|---|---|---|---|---|---|---|---|---|---|
| 56 | 79.69 | 12 | 147.69 | 67% | 103.43 | 67.17 | 42.06 | 212.66 | 0 | 0 |
| 62.67 | 70.31 | 14 | 146.98 | 67% | 107.49 | 63.44 | 45.19 | 216.12 | 0 | 0 |
| 60 | 67.19 | 12 | 139.19 | 63% | 105.86 | 62.2 | 42.06 | 210.12 | 0 | 0 |
| 34.67 | 68.75 | 10 | 113.42 | 52% | 90.46 | 62.82 | 38.92 | 192.21 | 0 | 0 |
| 30.67 | 70.31 | 10 | 110.98 | 50% | 88.03 | 63.44 | 38.92 | 190.39 | 0 | 0 |
| 41.33 | 57.81 | 10 | 109.14 | 50% | 94.51 | 58.48 | 38.92 | 191.91 | 0 | 0 |
| 66.67 | 35.94 | 6 | 108.61 | 49% | 109.92 | 49.78 | 32.65 | 192.35 | 0 | 0 |
| 32 | 54.69 | 10 | 96.69 | 44% | 88.84 | 57.23 | 38.92 | 185 | 0 | 0 |
| 28 | 56.25 | 10 | 94.25 | 43% | 86.41 | 57.86 | 38.92 | 183.18 | 0 | 0 |
| 40 | 45.31 | 8 | 93.31 | 42% | 93.7 | 53.51 | 35.79 | 183 | 0 | 0 |
| 36 | 46.88 | 10 | 92.88 | 42% | 91.27 | 54.13 | 38.92 | 184.32 | 0 | 0 |
| 50.67 | 34.38 | 6 | 91.05 | 41% | 100.19 | 49.16 | 32.65 | 182 | 0 | 0 |
| 29.33 | 48.44 | 10 | 87.77 | 40% | 87.22 | 54.75 | 38.92 | 180.89 | 0 | 0 |
| 28 | 31.25 | 4 | 63.25 | 29% | 86.41 | 47.92 | 29.51 | 163.84 | 1 | 1 |
| 25.33 | 21.88 | 6 | 53.21 | 24% | 84.78 | 44.2 | 32.65 | 161.63 | 1 | 0 |
| 16 | 14.06 | 6 | 36.06 | 16% | 79.11 | 41.09 | 32.65 | 152.85 | 1 | 0 |

The Media release from MOETT is also essential in analysing the results (Analysis of SEA 20xx, 2024).

[2] Source: MOETT SEA Partial Score Sheet

**Figure 2**

*Media Release Sheet: Analysing the SEA 2024 Results*[3]



**Analysis of the Secondary Entrance Assessment (SEA) 2024 Results**

A total of 18,177 students wrote the Secondary Entrance Assessment (SEA) in 2024, of which 50.21% (9,127) were male and 49.79% (9,050) were female. In 2024, the mean Mathematics score is 50.7, as compared with 50.4 in 2023. Additionally, the mean English Language Arts Writing score is 59 compared with 53.4 in 2023, and the mean English Language Arts score is 53.4 compared with 61.6 in 2023. *See table below*

| Mean Raw Score | | | |
|---|---|---|---|
| **Year** | **Mathematics (100)** | **English Language Arts (100)** | **English Language Arts Writing (100)** |
| **2024** | **50.7** | **53.4** | **59** |
| **2023** | **50.4** | **61.6** | **53.4** |
| **2022** | **41.9** | **44.4** | **44.3** |

These mean scores in 2024, when compared to 2023 and 2022, show a generally encouraging trend with regard to student performance.

The performance of students in the SEA is also analyzed according to the percentage of students attaining three important thresholds, the percentage of students scoring above 50%, 30% and below and above 90%. In 2024, the percentage of students scoring 50% and above on the SEA was 57.91% versus 58.06% in 2023 and 37.06% in 2022. Additionally, in 2024 the percentage of students scoring 30% or below was 14.39% compared to 13.55% in 2023 and 27.81% in 2022. The percentage of students scoring above 90% in 2024 is 1.42% versus 2.11% in 2023 and 0.47% in 2022. The similarity of the students' performance in 2023 and 2024 indicate steady and stable recovery from the effects of COVID-19. *See table below*

Student individual sheets reflect the scores achieved on the SEA examination. Copies of these sheets are examined and shown to the consultant by the parents.

[3] Source: MOETT Media Release.

**Figure 3**

*Sample Student SEA Report*[4]


The Government of the Republic of Trinidad and Tobago

MINISTRY OF EDUCATION

SECONDARY ENTRANCE ASSESSMENT 20xx

STUDENT PERFORMANCE REPORT

**(A) Name:** SAM, SIARRA

**(B) Student Number:** 1234567890

**(C) Date of Birth:** 31 December 20xx

**(D) Gender:** Female

**(E) Examination Centre:** 0777 – SUCCESS PRIMARY

| (F) SUBJECT SCORES | | | |
|---|---|---|---|
| SUBJECT | MAXIMUM RAW SCORES | NATIONAL MEAN SCORES | STUDENT SCORES |
| Mathematics | 100 | 62.00 | 95.00 |
| English Language Arts | 100 | 59.00 | 96.00 |
| English Language Arts Writing | 20 | 12.00 | 19.00 |

| (G) GENERAL PERFORMANCE | |
|---|---|
| The Composite Standard Score, which is used to place the student into a secondary school, is the total of the student's scores that were each converted to a standard score and weighted. | 234.567 |

**(H) Secondary School Assigned:** 0888 – EXCELLENT SECONDARY

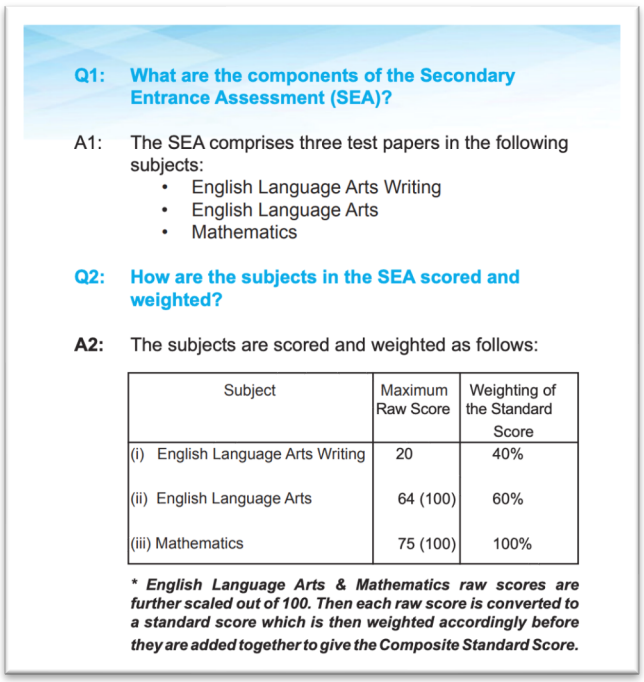
**(I) Registration Date:** 10 July 20xx

- Please contact your assigned school for further registration details.
- Remember to download the SEA Information Booklet which provides answers to some frequently asked questions such as "how to request a review of scores" and "how to apply for a transfer" among other important information.

[4] Source MOETT Media Release

**Figure 4**

*Components of SEA and Scored and Weighted Procedure*[5]



**Q1: What are the components of the Secondary Entrance Assessment (SEA)?**

A1: The SEA comprises three test papers in the following subjects:

- English Language Arts Writing
- English Language Arts
- Mathematics

**Q2: How are the subjects in the SEA scored and weighted?**

**A2:** The subjects are scored and weighted as follows:

| Subject | Maximum Raw Score | Weighting of the Standard Score |
|---|---|---|
| (i) English Language Arts Writing | 20 | 40% |
| (ii) English Language Arts | 64 (100) | 60% |
| (iii) Mathematics | 75 (100) | 100% |

**** English Language Arts & Mathematics raw scores are further scaled out of 100. Then each raw score is converted to a standard score which is then weighted accordingly before they are added together to give the Composite Standard Score.***

These baselines enable equitable comparisons regarding student success and allow us to assess how well the school is performing (Cox et al., 2016). The data will help us determine whether the intervention has improved educational outcomes.

This meticulous approach ensures that any positive changes observed are genuinely due to the implemented strategies (Cox et al., 2016). Therefore, pre- and post-intervention data provide educators and researchers with valuable insights into the effectiveness of these efforts in supporting students and enhancing the school environment. Furthermore, employing thorough data analysis not only addresses the need for baseline measurement but also aligns with recognised best practices in educational research, underscoring its significance in policy-making and promoting fairness (Centre for Equity for Learners E, 2022; Cox et al., 2016).

***Formative Assessment. -Amazing Achievers Camp***

To select students strategically for the Amazing Achievers Camps, the programme utilised the Ekwall/Shanker Reading Inventory. This underscores the importance of formative assessments in determining each student's literacy needs. Thanks to the Informal Reading Inventory, the consultant could personalise instruction. By identifying specific literacy deficits, it enabled effective one-to-one student engagement, a crucial aspect of formative assessment (Kaushik et al., 2023). Furthermore, the assessment tool is notable for its user-friendly design. It provides educators with clear and straightforward instructions on administering and scoring the tests. This structured approach fosters a supportive learning environment and emphasises the significance of continually adapting teaching strategies and providing feedback, both essential components of formative assessment (Ruiz-Rojas et al., 2023). By utilising assessment tools like this, educators can enhance the quality of instructional

[5] Source: https://storage.moe.gov.tt/wpdevelopment/2023/06/SEA-Booklet-2023_merged.pdf

interventions and their responsiveness, ultimately leading to improved outcomes for students and a more personalised educational experience for each student involved.

To gauge how participants were responding to the camp activities, assessments began at school sites before the start of the camp. This involved observing both in-person interactions and gathering online feedback, particularly as students started arriving before the official camp commencement. Educational consultants, who were deeply involved, conducted direct observations in some of these areas during the preparation period. Meanwhile, educators trained by these consultants carried out online assessments. This formative approach focuses on enhancing each participant's learning experience, which should subsequently improve the overall outcomes, aligning with research indicating that formative assessment effectively boosts student achievement. Indeed, formative assessment is now regarded as an essential element of educational thought, even being referred to as a key aspect of educational policy highlighting its significance in establishing productive learning environments. Although it is widely acknowledged as necessary, what formative assessment actually "means" in practice can occasionally be somewhat unclear. Nevertheless, most concur that it is crucial for developing skills necessary for future learning, particularly in settings like camps where experiential learning is a significant aspect of the experience. By integrating these various assessment methods, we can obtain a more comprehensive understanding of how students are engaging and progressing through the camp activities, enabling us to adapt our teaching strategies to better cater to diverse learning styles and needs.

***Even better opportunities for Challenged Learners***

To foster a positive learning environment and boost student results, effective teaching is essential (Torrance, 2012). Online tutoring on Saturdays grouped students, with sessions lasting from 1 to 1.5 hours. The turnout of students from Egypt was quite good. However, among the Erin students, only about 5 or 6 out of 17 attended (Kamalov et al., 2023), which is concerning. This discrepancy highlights the need for teaching strategies that capture students' attention and motivate them to attend regularly.

Furthermore, some Erin students were new to reading and required personalised, individual assistance (Grassini, 2023). As studies suggest, adapting teaching to meet the diverse needs of students can significantly aid in developing vital reading skills (Kamalov et al., 2023). This situation underscores the importance of effective teaching methods to address the various challenges in education, ensuring that all students have an equal opportunity to learn.

***Parent Involvement Data***

Subsequent meetings took place at Brighton AC and Erin R.C. School. These gatherings involved parents and focused on addressing absenteeism, as well as parental dedication to the TOFCO programme, which had been initiated following site visits from TOFCO representatives to select schools like Brighton AC, Erin R. C., Salazar Government, and Egypt R. C. (Topor et al., 2010). Parents voiced an apparent inclination during these discussions: a preference for in-person classes, provided they were viable, complementing the existing online classes for their children. A key reason cited was the problematic internet connectivity in their area, presenting a considerable impediment to effective learning. In response to this request, in-person classes were proactively established each Friday at Erin R. C. School and continued until 26 March 2021. This involvement underscores the critical role parental engagement plays in boosting educational outcomes, echoing findings that engaged parents can notably improve children's commitment to learning and overall academic performance (Hill & Tyson, 2009). It is rather evident that addressing the concerns of parents and ensuring their involvement is crucial for building an inclusive environment that fosters student prosperity (Murray, 2020). It is a dynamic where strategic efforts aimed at boosting parental participation can, in most cases, close educational access

disparities, specifically for families facing economic disadvantages (Wang & Sheikh-Khalil, 2014). The collaboration between educators and the students' families here acts as a template for tackling more pervasive problems of equality in education. These issues continue to affect various communities in Erin and Brighton.

### *Data Analysis*

ANOVA, or Analysis of Variance, served as our chosen statistical method. In educational research, it is pretty crucial for assessing whether the averages across three or more unrelated groups demonstrate significant differences (Musengimana et al., 2025). It is an efficient way to compare multiple groups simultaneously, a benefit that puts it ahead of methods like t-tests or z-tests, as those methods can only directly compare two groups (Ganieva et al., 2025). When establishing baseline measurements, systematic data collection occurred. This involved analysing score sheets from school principals. We examined results from the year before the SEA2019+ intervention, along with data collected after we implemented PASS (SEA2020+). According to Garner and Horn (2018), these baseline measures were essential. Why? Because they ensure we can effectively compare student performance before and after the intervention, making the results credible. This statistical rigour emphasises the need for data integrity. Such a framework is vital for properly evaluating the efficacy of educational initiatives like PASS.

### *Post-Intervention Measurement*

Data collection after the intervention, focusing on the same variables, is essential. It facilitates a detailed analysis of whether the intervention was effective and led to the intended outcomes. Evaluating retrospectively allows us to compare the situation before and after, yielding important insights into how the intervention impacted participants. It is also crucial to maintain a rigorous and methodologically sound measurement approach, as rigour significantly affects the credibility of the results (Baker et al., 2020). For example, immersive virtual reality (VR) can substantially enhance outcomes compared to more traditional methods, making proper post-intervention measurement vital to confirm these improvements. Furthermore, systematically collecting data after the intervention enables us to assess the intervention's effectiveness thoroughly and provides a framework for continuously improving educational practices, as demonstrated in analyses of learning analytics (Viberg et al., 2023). Consequently, effective post-intervention measurement contributes to establishing a well-defined, evidence-based strategy for enhancing teaching, leading to tangible improvements in the learning experience itself and aligning with the discussion on how to advance education in general.

### *Formulating Hypotheses*

When undertaking research, a crucial step involves formulating the null hypothesis; this serves as your point of reference. The null hypothesis, or $H^0$, essentially states that there is no meaningful difference between the averages of different groups. Conversely, the alternative hypothesis, $H^1$, proposes that at least one group's average is significantly different. In this particular study, the null hypothesis suggests that PASS will not significantly change the percentage of students scoring above the 30th percentile. This is standard practice; hypotheses provide investigations with a theoretical structure, paving the way for rigorous analysis (Hariram et al., 2023). Clearly distinguishing null and alternative hypotheses is beneficial. It facilitates statistical testing and provides researchers with a structured approach to ascertain whether an intervention (like an educational programme) makes a difference. Consequently, by employing this framework, one can systematically determine whether initiatives such as PASS genuinely assist students in improving or merely perpetuate existing educational inequalities—an issue extensively discussed in the literature (Hariram et al., 2023).

### *Calculating Sum of Squares (SS)*

Understanding variability within a dataset necessitates calculating several Sum of Squares (SS) components: SS Total, SS Between (SSB), and SS Within (SSW). These elements are essential for grasping the amount of variation in the data. SS Total represents, well, the total variability and includes both SS Between and SS Within. It gives a comprehensive view of the dataset's distribution (Field, 2012). Now, SS Between (SSB) shows the variability caused by different group effects or treatments. Essentially, it illustrates how group means diverge from the overall mean, as Henson (2006) points out.

On the other hand, SS Within (SSW) homes in on the variability inside each group, highlighting differences among individual data points. Breaking down the total sum of squares gives researchers a clearer handle on variation sources. This lets them perform more robust statistical analyses and interpretations (Terrell, 2021). So, variance analysis becomes more than just math. It becomes a reflection of genuine relationships inside the data. These calculations are foundational for tests like ANOVA, which aim to infer population parameters from sample data. This underscores the need to determine these sums of squares in quantitative research initiatives accurately.

### *Computing Mean Square (MS)*

Calculating the mean square, which involves averaging squared deviations for both between-group and within-group measures, is essential to assess variance in statistical analyses accurately. This approach helps us understand differences between groups and significantly improves the interpretability of analysis results. Detailed analysis is key for practical outcome interpretation, giving context to understand the implications of calculated variances (Gawlikowski et al., 2023). In fields depending on statistical inference, data interpretation often depends on well-calibrated models providing reliable uncertainty estimates. This relates to the ongoing discussion about the importance of accurate uncertainty quantification in neural networks and similar frameworks supporting robust statistical analysis (Gawlikowski & Gottschling, 2024). By including these considerations when computing mean squares, researchers can better account for different sources of variability, refine evaluations of statistical significance, and thus enhance the validity of conclusions (Park et al., 2023).

### *Statistical. Analysis Procedures*

When exploring statistical analysis, group and within-group variability are key. Degrees of Freedom, or df, are determined by identifying the number of values free to vary when statistics are calculated--this is quite important for robust results and accurate interpretations, as stated by Park, Cho and Ki (2009). An essential calculation in this process, the F-Ratio, computes the ratio of mean squares between groups (MSB) to mean squares within groups (MSW). This comprehensively tests the null hypothesis. In most cases, this will provide clarity on the effectiveness of interventions, according to García-Peñalvo et al., 2021.

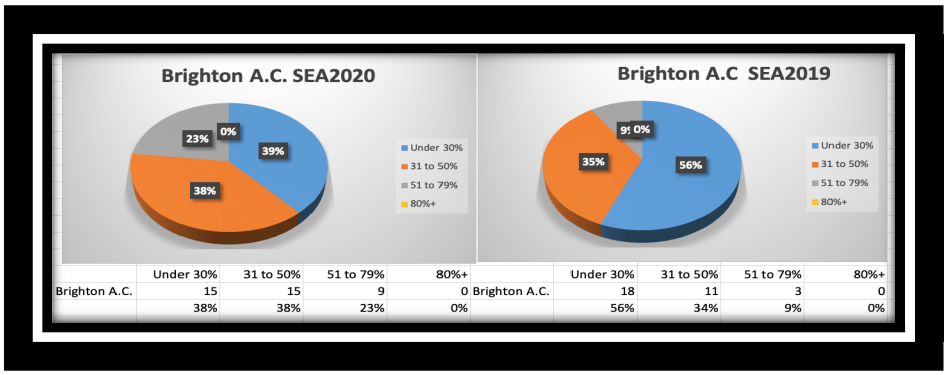
Furthermore, researchers must interpret the P-Value; evaluating the p-value to determine if the F-ratio is significant may reveal critical insights. For example, a small p-value (e.g., <0.05) often suggests significant differences between groups, reinforcing observed effects. The validation procedure meticulously compared pre- and post-intervention data, ensuring positive changes could be attributed to the methods employed--this supports the foundations of statistical rigour in research (Johnson, K., 2023). This allowed researchers to ascertain whether measured changes could be attributed to the intervention itself, rather than random variation; thus, findings exhibit a high standard of credibility (Wilson, C., et al., 2019).

## Results

Academic performance saw a noteworthy improvement, marked by a seventeen per cent reduction in pupils scoring under 30%. We observed a rise in the 31-50% band, from thirty-four per cent (34%) to the present thirty-eight per cent (38%), suggesting a positive trend for students. The 51-79% band also exhibited a substantial shift, increasing from 9% to 23%. These shifts reflect targeted initiatives. Indeed, the SEA2020 results at Brighton A.C. Primary showed improvement across those three bands when compared to SEA2019. Specifically, the under 30% score decreased by seventeen percent. Percentages in that 31 to 50% range also showed a notable increase, shifting from 34 percent (34%) to 38 percent. Moreover, the transformation in the band of 51 to 79% was quite remarkable, changing from nine percent (9%) to twenty-three percent (23%). Understanding the broader educational performance context hinges on these findings (Bradley et al., 2025) and (Dungca et al., 2024).

## Figure 5

*Brighton A.C. PASS -1*




## Table 3

*Brighton ANOVA 2019/2020*

| Anova: Single Factor: SUMMARY | | | | | | |
|---|---|---|---|---|---|---|
| *Groups* | *Count* | *Sum* | *Average* | *Variance* | | |
| Row 1 | 2 | 0.95 | 0.475 | 0.01445 | | |
| Row 2 | 2 | 0.73 | 0.365 | 0.00045 | | |
| Row 3 | 2 | 0.32 | 0.16 | 0.0098 | | |
| Row 4 | 2 | 0 | 0 | 0 | | |
| ANOVA | | | | | | |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 0.2689 | 3 | 0.08963333 | 14.5155196 | 0.01289216 | 6.59138212 |
| Within Groups | 0.0247 | 4 | 0.006175 | | | |
| Total | 0.2936 | 7 | | | | |

***ANOVA (Analysis of Variance): Brighton A.C.***

How, precisely, does the PASS program support Brighton AC students as they move towards secondary education? And what kind of impact does it have on changes in literacy and numeracy levels at the school?

Looking at the data, specifically the percentage of students scoring above 30%, it seems clear that a greater proportion are ready for secondary school in 2020 without needing extra help. This finding resonates with educational research indicating that well-organized programs can indeed boost academic readiness quite a bit (Johnson, K., 2023). The ANOVA analysis also reveals a significant difference between groups at Brighton AC, comparing SEA2019 (pre-PASS) and SEA2020 (post-PASS). To be exact, the F-value of 32.967 far exceeds the critical F value of 6.591. Furthermore, the P-value is only 0.00, much lower than the typical alpha level of 0.05. This strongly suggests that the differences between the groups are statistically significant. In other words, the PASS program appears to be quite effective in shrinking the achievement gap in literacy and numeracy skills. This statistical evidence underscores the idea that interventions like PASS can result in tangible educational improvements, highlighting why it's so important to keep investing in these types of programs to foster fairness in education.

**Figure 6**

*Guapo SEA 2020 Overall Performance*

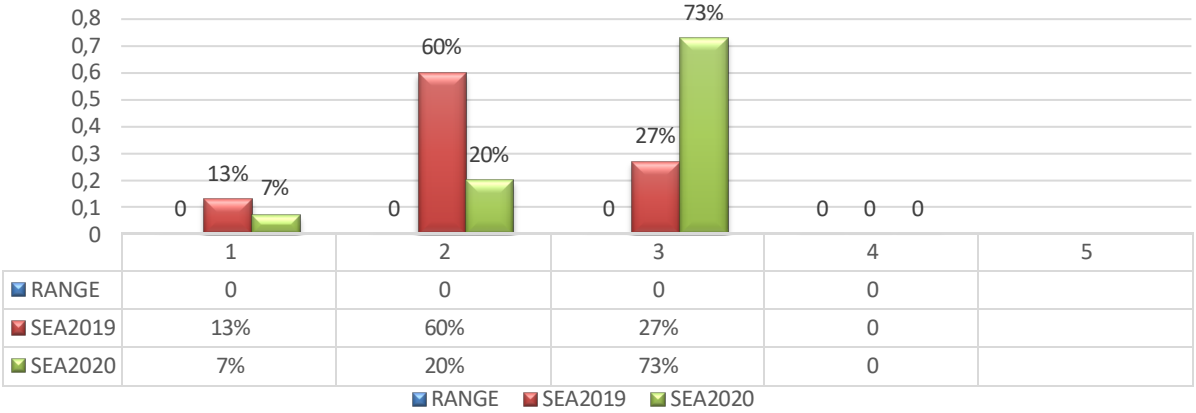



Table 4 presents the performance metrics for the GUAPO SEA initiative specifically in 2020. It highlights educational equity across Trinidad and Tobago's diverse communities.

***Guapo Overall Performance SEA2020***

Guapo Government Primary School has demonstrated considerable improvements in student achievement over time, mirroring wider patterns in Trinidad and Tobago's education landscape. The school's performance data indicates that back in 2019, a relatively small portion, around 13%, of students scored under 30%. A substantial 60% found themselves in the 30-49% bracket, while 27% achieved marks between 50-79% (Ministry of Education, Trinidad and Tobago. (2023, June 27). Fast forward to 2020, and things had changed notably. The percentage of students scoring below 30% plummeted to approximately 7%, and those in the 30-49% range also decreased substantially, landing around 20%. Remarkably, a significant 73% of students achieved scores ranging from 50-79%, showing an upward trend in academic performance, which seems to resonate with recent educational changes intended to boost learning outcomes (Martinez-Perez et al., 2020). Current state and future trends: a citation network analysis of the academic performance field. *International Journal of Environmental Research and Public Health*, *17*(15), 5352.2020). This shift highlights the positive effects of focused interventions and resource distribution within the school system, which is quite essential when tackling the difficulties presented by inequalities in education.

Nevertheless, it's crucial to bear in mind that, even though the numbers suggest advancement, continuous work should focus on keeping up these enhancements and increasing academic benchmarks at Guapo Government Primary School, in line with regional initiatives for educational equity. As illustrated by the figures, the metrics for 2020 are a turning point. Yet, they also highlight how necessary it is to keep monitoring progress and strategically planning to make sure all students can achieve their full potential within a fair educational setting (Johnson, 2023).

**Table 4**

*ANOVA: GUAPO GOVERNMENT*

| Groups | Count | Sum | Average | Variance | | |
|---|---|---|---|---|---|---|
| Column 1 | 2 | 0.2 | 0.1 | 0.0018 | | |
| Column 2 | 2 | 0.8 | 0.4 | 0.08 | | |
| Column 3 | 2 | 1 | 0.5 | 0.1058 | | |
| Column 4 | 2 | 0 | 0 | 0 | | |
| ANOVA | | | | | | |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 0.34 | 3 | 0.11333333 | 2.41648898 | 0.20 | 6.59138212 |
| Within Groups | 0.1876 | 4 | 0.0469 | | | |
| Total | 0.5276 | 7 | | | | |

How, precisely, does the PASS program support Guapo Government students as they move towards secondary education? And what kind of impact does it have on changes in literacy and numeracy levels at the school?

Looking at the data, specifically the percentage of students scoring above 30%, a greater proportion of students are ready for secondary school in 2020 without needing extra help, moving in 2020 to 87%. This finding resonates with educational research indicating that well-organised programs can indeed boost academic readiness quite a bit (Johnson et al., 2023).

***ANOVA Analysis***

Analysis of Variance, or ANOVA, offers researchers a powerful statistical avenue for exploring differences between group means. When datasets feature several distinct groups, this method proves particularly beneficial. It helps determine whether at least one group mean is substantially different from the others, as Field noted in 2012 (Field, A., 2012). The data table here presents a variance analysis example, revealing how ANOVA can illuminate relationships and influences among variables. These might otherwise remain hidden if simpler statistical techniques were used. Indeed, ANOVA aligns well with current research methodologies in diverse fields, providing crucial insights into group interactions, as Hsu discussed in 2017 (Hsu, J. C., et al., 2017). Examining variance within intricate datasets, ANOVA is thus a crucial component of statistical analysis, aiding researchers in making well-supported conclusions that enhance their fields. Detailed analysis of variance elements supports not only theoretical studies but also practical applications in many research situations, reinforcing the trustworthiness of findings via solid statistical evidence, per Pearson, R. W. (2010). This approach is robust.

**Table 5**

*VANCE RIVER RC Anova: Single Factor*

| **SUMMARY** | | | | | | |
|---|---|---|---|---|---|---|
| *Groups* | *Count* | *Sum* | *Average* | *Variance* | | |
| Column 1 | 2 | 0.35 | 0.175 | 0.00845 | | |
| Column 2 | 2 | 0.87 | 0.435 | 0.00845 | | |
| Column 3 | 2 | 0.67 | 0.335 | 5E-05 | | |
| Column 4 | 2 | 0.11 | 0.055 | 5E-05 | | |
| ANOVA | | | | | | |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 0.1702 | 3 | 0.05673333 | 13.3490196 | 0.01498643 | 6.59138212 |
| Within Groups | 0.017 | 4 | 0.00425 | | | |
| Total | 0.1872 | 7 | | | | |

## *ANOVA Results for Vance River RC*

Regarding the Vance River RC, the ANOVA results' variations stem from several key factors. Looking at Between Groups, the Sum of Squares (SS) registers at 0.1702, accompanied by 3 Degrees of Freedom (df), yielding a Mean Square (MS) of 0.05673333. The F-value is 13.3490196, and notably, the P-value is 0.01498643, while the F critical value stands at 6.591382122. For Within Groups, the Sum of Squares (SS) measures 0.017, with 4 Degrees of Freedom (df), producing a Mean Square (MS) of 0.004252. Total Sum of Squares reaches SS = 0.1872, with Degrees of Freedom (df) at 72. Interpreting these ANOVA results for Vance River RC suggests —generally speaking — a significant difference between the groups, namely SEA2020 and SEA 2019; this is because the F-value surpasses the critical F-value, and the P-value is below 0.05, which is a standard threshold for declaring statistical significance. Indeed, such findings are in line with research that emphasises identifying key variations via ANOVA in resource management and ecological contexts (Genc, K.Y. 2014). Moreover, the implications here are relevant for ongoing strategies aimed at watershed management, signalling the need for specific interventions. This analysis is crucial for grasping the environmental dynamics impacting the Vance River RC, thus informing resource allocation and management decisions in the area, which ultimately underpins initiatives such as the LA BREA RC PASS for 2019-2020.

**Table 6**

*Performance Analysis at La Brea RC*

| Year | % of students scoring <30% | % of students scoring 30-49% | % of students 50-79% | % of students scoring ≥80% | No.of students |
|---|---|---|---|---|---|
| 2019 | 11% | **44%** | 42% | **3%** | **59** |
| 2020 | 17% | **37%** | 45% | **1%** | **65** |

In 2020, the SEA examination at La Brea RC involved sixty-five students; the outcomes offered considerable insight into student capabilities and preparedness. According to results, a substantial 37% scored between 30-49%, and, regrettably, 17% of students failed (scoring 0-30%). This indicates a worrisome underperformance trend. A moderately successful group, representing the largest segment at 45%, achieved scores of 50-79%; a mere 2% exceeded 80. Performance stagnation is evident when juxtaposed with the SEA 2019 data; Baker et al. (2020) note the absence of statistically significant improvement exceeding the 30% threshold. The situation underscores persistent systemic challenges hindering improved educational outcomes. Thus, targeted strategies within the existing educational framework appear essential for bolstering foundational skills.

***Statistical Analysis of LA BREA RC***

**Table 7**

*ANOVA Test For Significance La Brea RC*

| Anova: Single Factor | | | | | | |
|---|---|---|---|---|---|---|
| SUMMARY | | | | | | |
| *Groups* | *Count* | *Sum* | *Average* | *Variance* | | |
| Column 1 | 2 | 0.28 | 0.14 | 0.0018 | | |
| Column 2 | 2 | 0.81 | 0.405 | 0.00245 | | |
| Column 3 | 2 | 0.87 | 0.435 | 0.00045 | | |
| Column 4 | 2 | 0.04 | 0.02 | 0.0002 | | |
| LA BREA RC. ANOVA | | | | | | |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 0.2465 | 3 | 0.08216667 | 67.0748299 | 0.00070766 | 6.59138212 |
| Within Groups | 0.0049 | 4 | 0.001225 | | | |
| | | | | | | |
| Total | 0.2514 | 7 | | | | |

Exploring ANOVA results from the LA BREA RC study offers key understandings of the region's educational dynamics, notably concerning academic resource distribution. This analysis gains importance given the broader issue of educational disparity, where statistical methods help reveal patterns in student performance and resource allocation (Yan et al., 2021). Educational theories suggest that statistical techniques like ANOVA aren't just for numerical assessment but are frameworks for understanding socioeducational constructs (Thibault, 2020).

***Interpretation***

How, precisely, does the PASS program lend a hand to La Brea RC as it preps students for the leap to secondary schooling?

The PASS push seeks to fashion embracing spaces backing all students--particularly those from less privileged circumstances--as they make their way through their studies, tackling the thorny matter of fairness in education (Chishiba et al., 2024), (Gavigan & Kurtts, 2010).

Just how much does PASS influence the fluctuations in reading and math skills at this point? It's generally understood that firm support setups play a key part in smoothing out differences in school results, most notably for students from assorted economic and ethnic origins (Levinson et al., 2022).

***Statistical Evaluation of Students' Performance***

To assess the impact on student performance, an ANOVA test was employed both before and after the intervention, providing a robust method for interpreting results at La Brea RC. Such an approach is particularly valuable in educational studies, Abiodun et al. (2018) note, helping to ensure that sound conclusions can be drawn from the data. The findings revealed a substantial impact on performance ($p = 0.00$, well below $p = 0.05$), which significantly strengthens the findings. An F-value of 67.08, considerably above the critical F value of 6.59, provides solid evidence that differences among groups are not accidental. Furthermore, with P-values comfortably below the accepted threshold, empirical evidence supports a statistically significant difference. In other words, the observed differences among the groups are significant and not merely due to chance, underscoring the usefulness of ANOVA in educational strategies and evaluating student performance metrics.

**Figure 7**

*ERIN RC – PASS-2 (PRE-SEA2020 -POST- SEA2021)*[6]

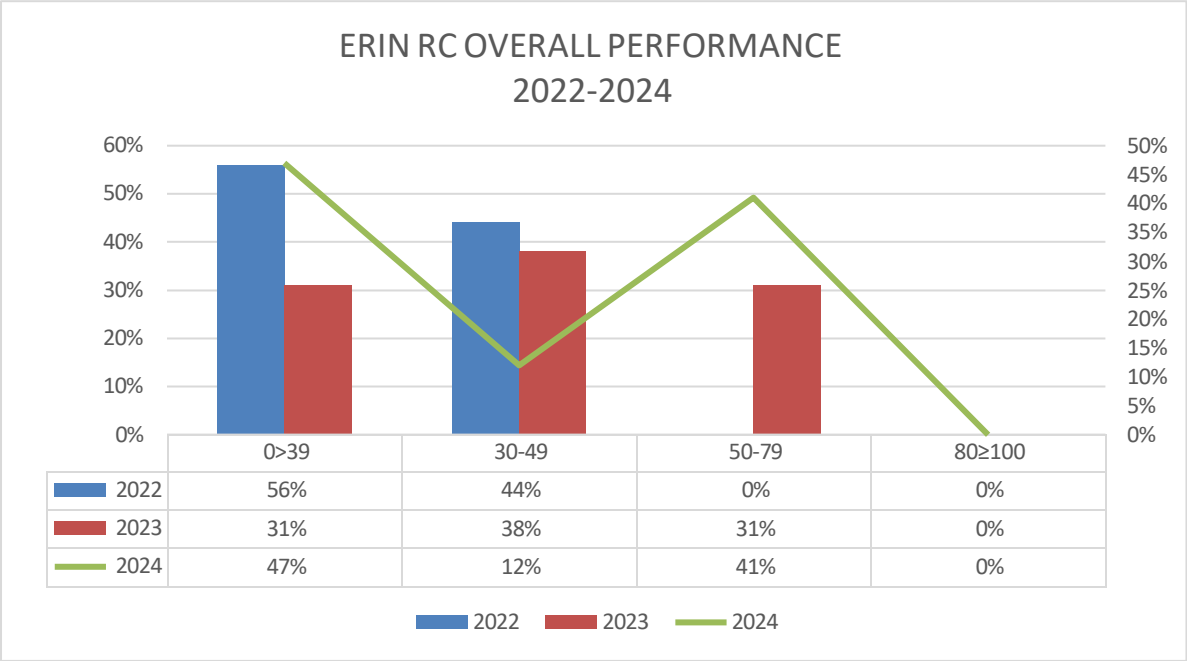

***ANOVA Results/Interpretation – Erin R.C.***

In what ways, precisely, does the PASS program support institutions like Erin R.C. Primary School in smoothing the transition to secondary education for students, and what impact does it have on literacy and numeracy shifts at the school?

[6] Source: Produced by Y. John from collected data.

**Figure 8**

*Overall Performance Erin RC 2022-2024*




*As the analysis of variance (ANOVA) results show, Erin R.C. Primary School experienced considerable improvement in student performance between 2020 and 2021. Looking at 2021, it is evident that all ELA students in the TOFCO intervention exceeded the SEA assessment cut-off by 31%. This marks a significant increase from the 78% observed in 2020— a substantial 22% rise (Gavigan, K., & Kurtts, S., 2010). In ELA-Writing, moreover, all students receiving the PASS intervention (100%) scored above 30% in 2021; the previous year, this figure was 83%, demonstrating a notable 17% increase in performance. With a calculated F-value of 32.9, which is above the critical threshold of 6.6, and a P-value of 0.003, which is significantly less than the typical alpha level of 0.05, statistical significance is clear here (Levinson, M., Geron, T., & Brighouse, H., 2022). These statistical findings provide robust evidence that Erin R.C. Primary School's SEA examination performance in both ELA and writing improved markedly from 2020 to 2021.*

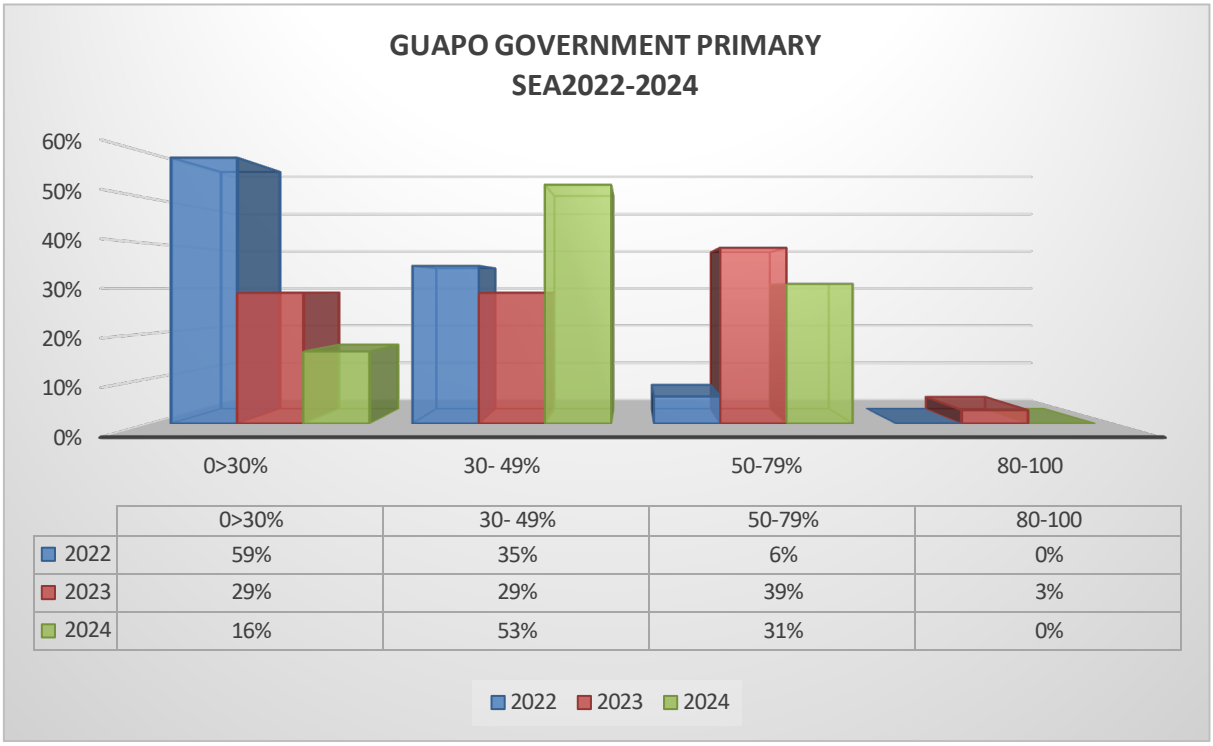
**Guapo Government**

The overall results for SEA in 2022, 2023, and 2024 at Guapo Government Primary School, as illustrated in Table 10 and Figure 4, suggest continued excellence in student performance. As noted in Table 10: PASS (2022-2024) - PRE/POST Figure 4: Overall performance SEA 2022 to SEA 2024, in 2022, this school sustained its prior successes, with 84% of students scoring above 30%, which includes 53% scoring between 31-50% and 31% scoring between 51-79%. This data reflects both consistent improvement trends and generally elevated achievement levels, suggesting further exploration of the factors at play is warranted (Center for Equity for Learners E, 2022; University for Business and Technology (UBT) in Kosovo, 2022).

***Guapo Government School Results***

**Figure 9**

PASS (2022-2024)-PRE/POST / Overall Performance SEA2022 to SEA2024




| | 0>30% | 30- 49% | 50-79% | 80-100 |
|---|---|---|---|---|
| 2022 | 59% | 35% | 6% | 0% |
| 2023 | 29% | 29% | 39% | 3% |
| 2024 | 16% | 53% | 31% | 0% |

Ms. M. Nandlal, Ms. K. Fabien, Mr. B. Davis, and the rest of Guapo's staff have a significant role in enhancing the learning environment at Guapo Government School. It is crucial to ensure that every student has equitable access to both resources and support. Guapo Government Primary School has witnessed considerable improvements in students' performance over the years. In 2019, only 13% of students scored less than 30%, while 60% fell within the 30-49% range, and 27% scored between 50-79%. In 2020, the percentage of students scoring less than 30% decreased to 7%, while those in the 30-49% range dropped to 20%. An impressive 73% of students scored between 50 and 79%, indicating a positive trend in academic performance. For the year 2022, Guapo Government Primary School maintained its excellence, with 84% of students achieving above 30%. Specifically, 53% scored between 31-50%, while 31% scored between 51-79%. This consistent improvement showcases the success of the educational strategies employed during this period. Overall, the evidence suggests that Guapo Government Primary School has effectively prepared students for secondary school, as reflected in the significant increase in the percentage of students achieving over 30% in the SEA exams during 2022 and 2024.

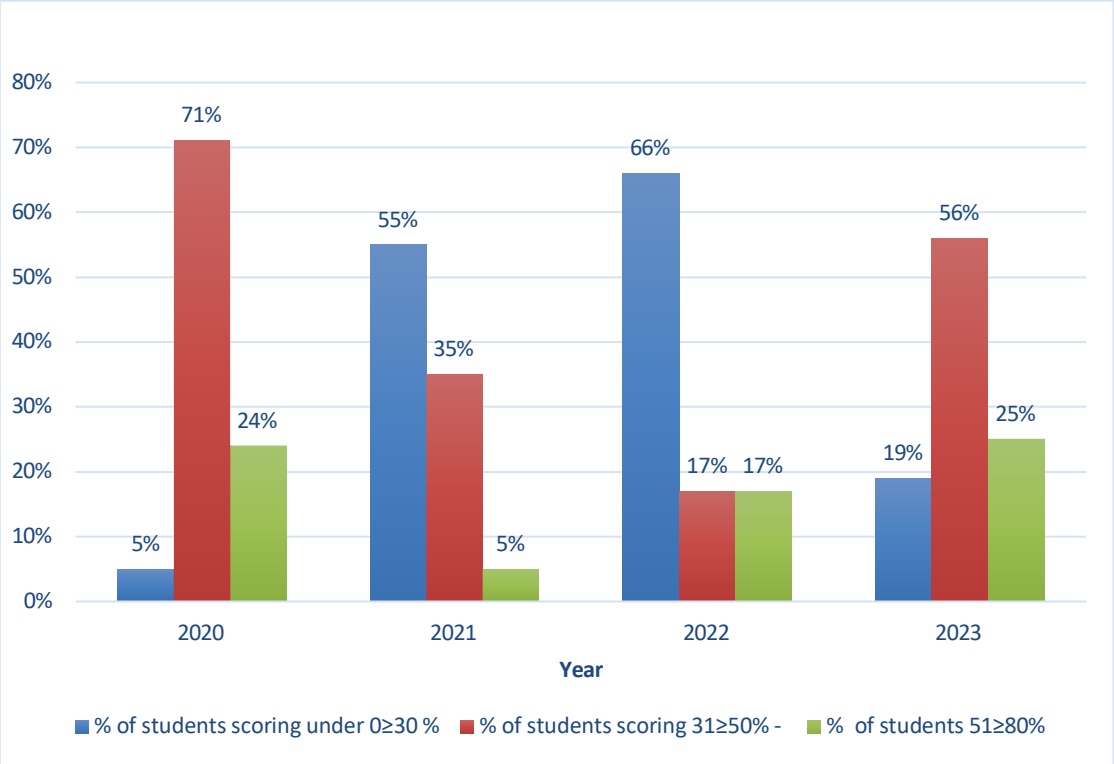
***Santa Flora A.C. Primary School***

In community engagement and development, Santa Flora A.C.'s principal, Mr. S. Whiteman, SEA teacher, Ms. Cindy Noel and other staff members often stand out for their crucial roles in neighbourhood outreach and resource allocation. It's essential to acknowledge this staff's contributions, particularly in fostering robust connections between community members and necessary services. Furthermore, the relationships these figures nurture can, in most cases, help ensure that local voices are amplified in decision-making processes, which ideally leads to more informed and equitable outcomes for all residents, especially in areas facing socioeconomic challenges (Cruz et al., 2021). As such, Mr. S. Whiteman and Ms. C. Noel, along with other staff members' roles, are not just directorial; they represent

a more profound commitment to community upliftment, somewhat like ongoing youth organising efforts in comparable contexts that aim to empower those from underrepresented populations (Terriquez et al., 2021). The continued involvement of dedicated leaders is crucial for the sustainability of community initiatives, and a culture of collaboration should be fostered to bridge gaps in access to opportunities and information.

**Figure 10**

*Santa Flora Overall Performance*




[7]

Comparing Santa Flora AC performance from 2020 to 2023, this analysis indicates that the performance has undergone significant changes over the years, with the PASS program in 2023 showing a notable impact on student performance. Eighty-one per cent (81%) of the students scored 30% and above for SEA2023, compared to 33 per cent (33%) in 2022.

**Table 9**

*Santa Flora AC Anova: Single Factor*

| SUMMARY | | | | | | |
|---|---|---|---|---|---|---|
| *Groups* | *Count* | *Sum* | *Average* | *Variance* | | |
| Column 1 | 2 | 4045 | 2022.5 | 0.5 | | |
| Column 2 | 2 | 0.85 | 0.425 | 0.11045 | | |
| Column 3 | 2 | 0.73 | 0.365 | 0.07605 | | |
| Column 4 | 2 | 0.42 | 0.21 | 0.0032 | | |

[7] Source: Prepared by Y. John from data collected.

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 6133737.09 | 3 | 2044579.03 | 11857787.6 | 2.3707E-14 | 6.59138212 |
| Within Groups | 0.6897 | 4 | 0.172425 | | | |
| | | | | | | |
| Total | 6133737.78 | 7 | | | | |

In what ways, precisely, does the PASS program support institutions like Santa Flora A.C. Primary School in smoothing the transition to secondary education for students, and what impact does it have on literacy and numeracy shifts at the school?

***ANOVA Table Analysis: Santa Flora AC***

***Overall Performance Comparison***

When comparing the raw scores obtained by students in SEA2023 to those from SEA2022, a noteworthy trend emerged, revealing a 48% decrease in the population of students scoring 30% or less overall. This decrease was accompanied by a striking 35% increase in the percentage of students whose scores exceeded the 30% threshold, specifically in the range of 31 - 50%. Additionally, there was a significant increase of 13 percent in the number of students scoring within the 51% to 75% range and above. Remarkably, eighty-one percent (81%) of students achieved scores of 30% and above in SEA2023, a substantial rise compared to only 33 percent (33%) in 2022. These results indicate that Santa Flora A.C. has successfully prepared students to enter the Secondary schools without assistance. Furthermore, it is essential to note that the numeracy levels of students over the years have shown significant changes, reflecting the impact of educational strategies implemented during this period (Guerrero-Analco et al., 202; Fortes et al., 2023). This upward trend in performance is critical to understanding the broader educational outcomes within the institution and the measures necessary for continued improvement in student learning outcomes.

***Increase in Numeracy Across the Curriculum***

In Numeracy across the curriculum, the results reflected a targeted enhancement of mathematical understanding, as noted in SEA 2023 versus SEA 2022. Mathematics scores for the SEA2023 report that thirty-one per cent (31%) of students scored in the range of 0–30%, a significant reduction in low performance compared to seventy-one per cent (71%) in SEA2022, indicating a shift in the educational landscape. This performance change represents a substantial forty percent (40%) improvement in numeracy outcomes, suggesting effective interventions may have contributed to this positive trend. Additionally, fifty percent (50%) of the students in 2023 scored in the range of 31–50%, compared to just thirteen percent, pointing to a marked increase in the number of students achieving at least basic numeracy levels. This upward trajectory in numeracy is critical, as research indicates that improving mathematical skills is essential for broader educational success and is closely related to effective teaching strategies that engage diverse learners (Fritz et al., 2024; N/A, 2023).

***Overview of Student Performance in SEA2023***

Nineteen per cent (19%) of students achieved scores within the range of 51-100% in SEA2023, marking an increase from the sixteen per cent (16%) recorded in SEA2022, indicating a notable improvement in student performance over the year (Sambrano, 2024). Furthermore, a significant sixty-nine percent (69%) of students scored above 30 percent (30%) in 2023, in stark contrast to just twenty-nine percent (29%) in 2022, demonstrating a trend towards higher overall achievement levels among the student population (Jones et al., 2013) (Stephenson P, 2023). This upward shift in performance metrics suggests that educational strategies implemented in the previous year may be yielding positive effects, contributing to higher student outcomes in standardised assessments.

*Group 2 – Erin RC, Guapo Government, and Vance River RC Primary Schools*

### *Results GROUP 2 SEA Overall Analysis for the Period 2022-2024*

This analysis provides an in-depth examination of Secondary Entrance Assessment (SEA) performance, specifically from 2022 to 2024. Data was disaggregated with a comprehensive approach; this enabled a clearer picture of trends and variations. Results indicate some fluctuations in student achievement, particularly when comparing 2020 results to those of subsequent years (2021-2024). Several factors may explain these variations, for example, changes in educational policy, instructional strategies, and even socio-economic conditions, as well as sociocultural learning. The data also highlights ongoing challenges, signaling the need for targeted interventions to support underrepresented student populations and promote greater equity in outcomes. These findings have

| t-Test: Two-Sample Assuming Equal Variances | | | t-Test: Two-Sample Assuming Equal Variances | | | t-Test: Two-Sample Assuming Equal Variances | t-Test: Two-Sample Assuming Equal Variances | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Var.1* | *Var.2* | | *Var. 3* | *Var. 4* | | | *Var. 1* | *Vai. 2* |
| Mean | 161.4 | 173.7 | Mean | 186.0 | 198. | Mean | Mean | 186.1 | 198.3 |
| Variance | 377.4 | 321. 5 | Variance | 265.5 | 209. | Variance | Variance | 265.5 | 209.5 |
| Observations | 13 | 12 | Obs. | 11 | 10 | Obs. | Observations | 11 | 10 |
| Pooled Variance | 350.7 | | Pooled Variance | 350.6 | | Pooled Variance | Pooled Variance | 350.6 | |
| Hyp Mean Difference | 0 | | Hypothesized Mean Difference | 0 | | Hypothesized Mean Difference | Hypothesized Mean Difference | 0 | |
| df | 23 | | df | 23 | | df | Df | 23 | |
| t Stat | -1.643 | | t Stat | -1.6 | | t Stat | t Stat | -1.643 | |
| P(T<=t) one-tail | 0.056 | | P(T<=t) one-tail | 0.0002 | | P(T<=t) one-tail | P(T<=t) one-tail | 0.056 | |
| t Critical one-tail | 1.71 | | t Critical one-tail | 1.71 | | t Critical one-tail | t Critical one-tail | 1.713 | |
| P(T<=t) two-tail | 0.11 | | P(T<=t) two-tail | 0.11 | | P(T<=t) two-tail | P(T<=t) two-tail | 0.11 | |
| t Critical two-tail | 2.06 | | t Critical two-tail | 2.068 | | t Critical two-tail | t Critical two-tail | 2.07 | |

implications that extend beyond academic performance; they also address broader societal issues of equity and educational access. It is important to situate these results within a framework of inclusive education that prioritises diverse learning needs, fostering an environment where all students thrive both academically and socially. Therefore, this ongoing analysis both reflects past performance and sets

the stage for future recommendations aimed at improving educational quality and equity across all demographics involved in the SEA process.

***Statistical Analysis of Group Variance***

Understanding the differences within data sets is vital across many research areas, and this document will go into a complete statistical analysis of variance among groups. ANOVA, or analysis of variance, is a powerful tool (Surapaneni KM, 2024). It helps us see if there are statistically significant differences between the averages of different groups. Such analysis offers crucial insights into the factors that might be causing these differences. Comparing the variation among groups can reveal relationships and sources of variation that might be missed by simpler comparisons (Chang Y et al., 2024). From behavioral sciences to public health, this statistical analysis is instrumental where group dynamics and differences inform decisions and policies. The importance here extends beyond academics; understanding group variance directly affects how we address real-world issues, such as identifying inequalities that require attention and evaluating the effectiveness of treatments or programs across different groups. A close examination of group variance, therefore, enhances our statistical knowledge, and it helps practitioners and policymakers tackle societal problems with informed data strategies.

Erin's class saw twenty-five per cent (25%) of students achieving scores from thirty per cent (30%) up to one hundred per cent (100%), a notable success. It's also worth mentioning that another twenty-five per cent (25%) of the students scored between thirty and forty-nine per cent (30-49%), suggesting varied comprehension levels. Guapo's students, on the other hand, showed a seventy-four per cent (74%) scoring above thirty per cent — that is, in the 30%-100% range. Specifically, forty-seven per cent (47%) fell between thirty and forty-nine per cent (30-49%), while twenty-seven per cent (27%) scored from fifty to seventy-nine per cent (50%-79%). Vance River's students had forty-seven per cent (47%) also scoring above thirty per cent, in the same 30%—100 % range. Looking closer, twenty-six per cent (26%) scored in the thirty to forty-nine per cent bracket (30-49%), and nineteen per cent (19%) scored between fifty and seventy-nine per cent (50%-79%). The means of these samples were compared using an analysis of variance via a t-test, assuming equal variances, which permits a statistically significant comparison. This comparison, based on data from two distinct groups, makes it all the more important to stress the need to look at both mean and variance for a complete understanding of performance metrics. This sort of methodical precision is essential in education when judging how well students are doing, so that stats can accurately show how they performed, guiding what teachers do in the future, and supporting discussions about fairness and good testing in schools today (Chang Y et al., 2024), (Prather J et al., 2023).

***Statistical Analysis***

A statistical analysis was performed to determine outcomes, focusing on both pooled variance and differences in hypothesised means. These are both valuable tools for understanding the interplay between different variables in educational research. In most cases, such methodologies are crucial when assessing the effects of interventions and identifying areas in educational settings that could be improved, thereby reinforcing the idea that rigorous statistical evaluation is essential for informed decision-making. The systematic compilation of data, as presented in the table below, serves to elucidate the empirical findings that stem from this analysis in an accessible and visual manner; this may then foster further discussion around issues in educational equity. By employing proven statistical practices, the findings not only contribute to the existing literature in educational research but also align with contemporary efforts that have the goal of enhancing learning experiences for all students, thereby supporting equitable educational outcomes. Evidence from previous studies highlights the vital role that

statistical methodologies play in highlighting inequalities in educational performance, inequalities such as disparities that are linked to socioeconomic status as well as ethnicity, underscoring some of the persistent challenges faced by various demographic groups within the learning ecosystem. Ultimately, this analysis aims to provide a robust framework for understanding such complexities and how they manifest themselves in academic performance metrics, guiding stakeholders toward measures that can bridge these gaps.

**Table 11**

| OBJECTIVES | ERIN R.C[8] | GUAPO GOVERNMENT[9] | VANCE RIVER R.C.[10] |
|---|---|---|---|
| : 1 | 56% scored above thirty per cent (0%≥30%).<br>42% scored between 30%-49%, and (16%) scored between 50% -79%. | 84% of Guapo Government School students scored above 30% -53% scored 31≥50%, and 31% scored 51%-79%. | 74% of Vance River students scored 30%≥100%. 59% scored 31≥50%, and 24% scored 51%≤79%. |
| 2 | 83% of Erin's students scored in ELA-Writing 30%≥100%.<br>Seventeen percent scored 30%-49% and sixty- six percent (30%-49%), | Seventy-four (74%) scored 30%≥100%.<br>Forty-seven percent (40%) scored 30≥49%, and twenty-seven percent (27%) scored 50%-79%. | Ninety-five (95%) scored 30%≥100%.<br>Seventeen 17% scored 31≥50%. 75% scored 50%-79%, and three percent 3% scored ≥80%. |
| 3 | Eighty-three percent (83%) of Erin's students scored 30% or higher in ELA.<br><br>Fifty percent (50%) scored between thirty and forty-nine percent (30%≥49%), and thirty- three percent (33%) scored between 50% and seventy-nine percent. | Eighty-nine (89%) percent of Guapo students scored above thirty percent in ELA, that is 30%≥100%.<br><br>Forty-seven per cent scored between thirty and forty-nine per cent (30≥49%), and forty-two percent (42%) scored between 50%-79%). | Seventy-eight (78%) per cent scored above thirty percent in ELA, that is, 30%≥100%.<br><br>Thirty-four percent scored between thirty- one and fifty percent (31≥50%), and forty-four percent (44%) scored between fifty and seventy-nine percent (50%-79%). |
| 4 | Twenty-five (25%) percent of Erin's students scored thirty percent (30%≥100%).<br>Twenty-five percent scored in the range of thirty to forty-nine percent (30-49%). | Seventy-four (74%) percent of Guapo's students scored above thirty percent, that is, 30%≥100%.<br>Forty-seven percent (47%) scored between thirty and forty-nine percent (30≥49%), and twenty-seven percent (27%) scored between fifty and seventy-nine percent (50%-79%). | Forty-seven (47%) percent of Vance River students scored above thirty percent, that is, 30%≥100%.<br><br>Twenty-six percent (26%) scored between thirty and forty-nine percent (30≥49%), and nineteen percent (19%) scored between fifty and seventy-nine percent (50%-79%). |

**Table 12**

*Vance river overall performance 2022-2024*[11]

[8] Erin R.C. mastered three (3) of the four (4) objectives, achieving 75% success.
[9] Guapo Government mastered four (4) of the four (4) objectives, achieving 100% success.
[10] Vance River R.C. mastered three and eight tenths (3.8) of the four (4) objectives, achieving a 95% success.

[11] Source: Created by Y. John from data collected

| Year | % of students scoring <30% | % of students scoring 30-49% | % of students 50-79% | % of students scoring ≥80% | No. of students |
|---|---|---|---|---|---|
| 2022 | 37% | 35% | 28% | 0% | 46 |
| 2023 | 14% | 36% | 44% | 6% | 69 |
| 2024 | 26% | 50% | 24% | 0% | 58 |

**Figure 10**

*Vance river overall performance 2022-2024*

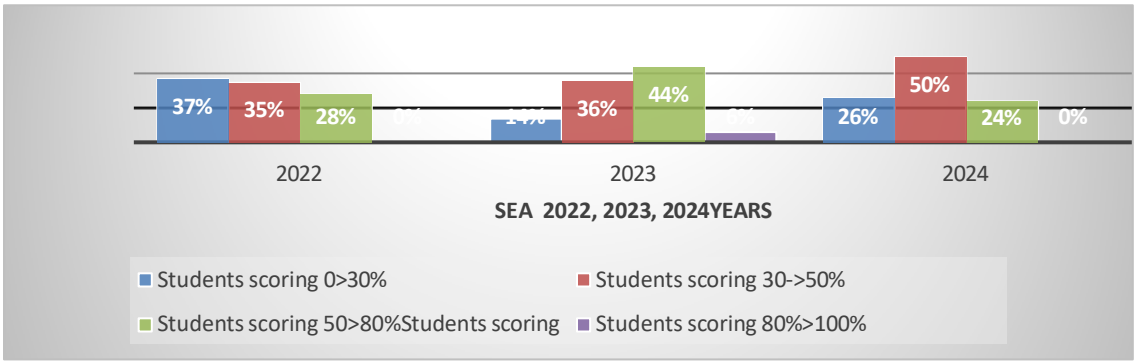


**Figure 11**

*Vance River RC Students Scoring 30%> Increases Over Time*[12]

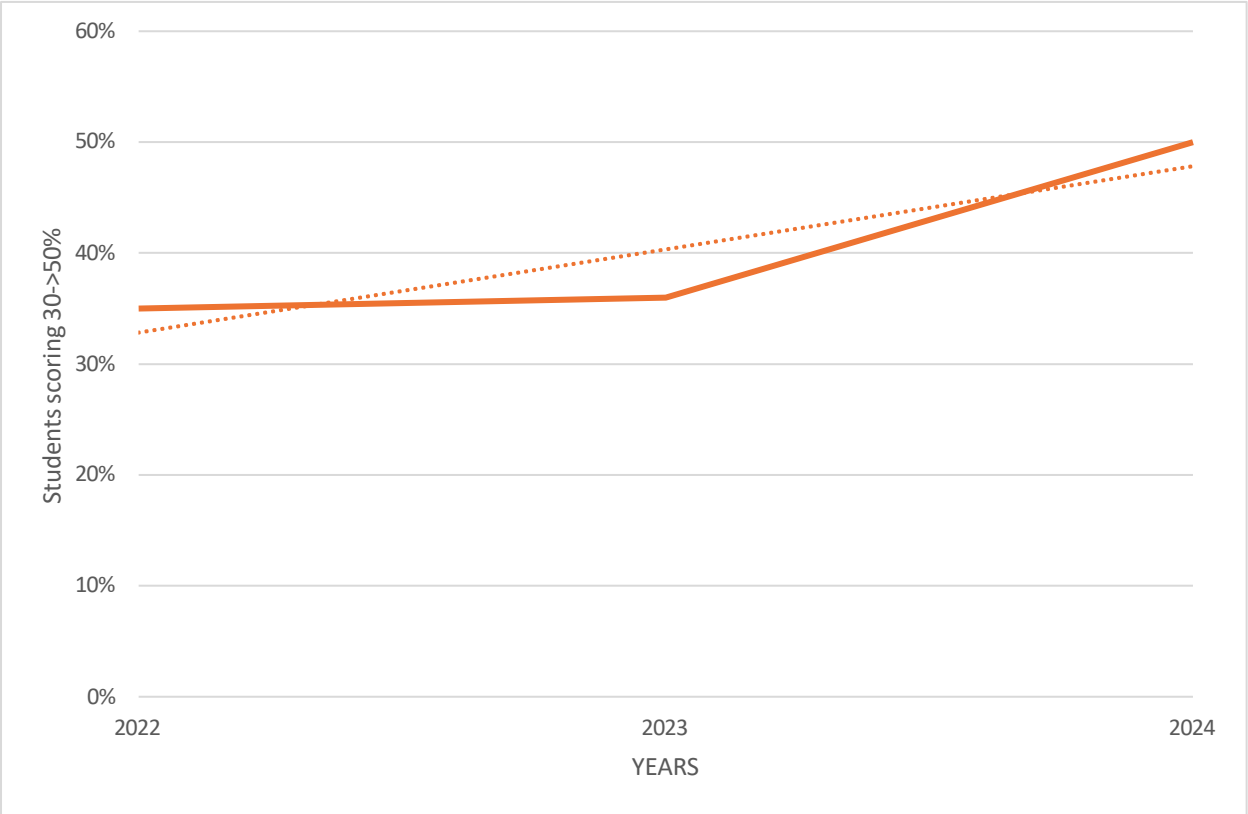



**Table 13**

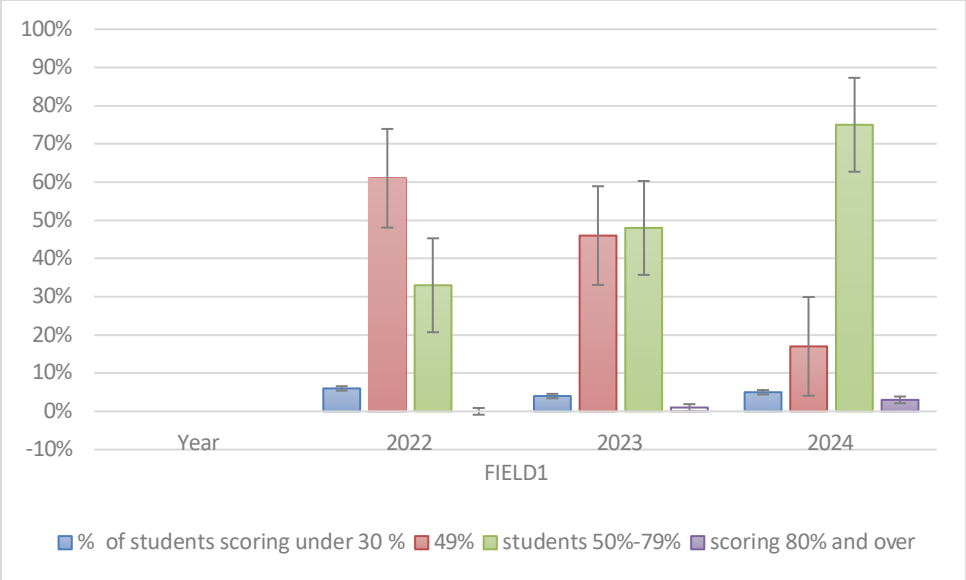
*Vance River RC ELA- Writing*

| Year | % of students scoring under 30 % | % of students scoring 30% - 49% | % of students 50%-79% | % of students scoring 80% and over |
|---|---|---|---|---|
| 2022 | 6% | 61% | 33% | 0% |
| 2023 | 4% | 46% | 48% | 1% |
| 2024 | 5% | 17% | 75% | 3% |

[12] Source: Created by Y. John from data collected.

**Figure 12**

*Vance River RC ELA- Writing 2022 -2024*




The box and whisker chart for creative writing development assessment at Vance River RC from 2022 to 2024 reveals some interesting trends. In 2022, 6% of the students scored 30% or below, 61% scored between 30% and 49%, and 33% scored between 50% and 79%. None scored 80% or more than 1. By 2023, the percentage of students scoring 30% and below decreased to 4%, while those scoring between 30% and 49% fell to 46%. The percentage of students scoring between 50% and 79% increased to 48%, and 1% of the students scored 80% or more. In 2024, the percentage of students scoring 30% and below rose to 5%, but higher grades improved: 17% of the students scored between 30% and 49%, 75% scored between 50% and 79%, and 3% scored 80% or more. These results indicate a positive trend in creative writing achievement at Vance River RC, as there is a sharp increase in students with better scores over the three years. The decline in the number of students scoring less than 30% and the rise in the number of students scoring between 50% to 79% and 80% and above indicate that the interventions and instructional strategies introduced during this time have been effective in enhancing students' abilities in creative writing.

**Table 14**

*Vance River RC English Language Arts*

| Year | % of students scoring under 30 % | % of students scoring 30% - 49% | % of students 50%-79% | % of students scoring 80% and over |
|---|---|---|---|---|
| 2022 | 26% | 48% | 24% | 2% |
| 2023 | 12% | 22% | 54% | 12% |
| 2024 | 22% | 34% | 44% | 0% |

**Table 15**

*Mathematics*

| Year | % of students scoring under 30 % | % of students scoring 30% - 49% | % of students 50%-79% | % of students scoring 80% and over |
|---|---|---|---|---|
| 2022 | 48% | 26% | 26% | 0% |
| 2023 | 26% | 41% | 26% | 7% |
| 2024 | 53% | 26% | 19% | 2% |

***Errors and Limitations of the Results***

Sample Size Considerations: The size of the student sample in each school might not fully represent the broader student population, as research suggests that sample size matters in studies like this. For example, in the PASS study, school sizes varied quite a bit, from only 11 students at the Erin RC site up to 68 at the Vance River and Egypt sites. If a school has a small number of students, the results may be skewed, making it harder to apply those findings to other situations. This is why having enough students in a study is crucial for drawing accurate conclusions. Furthermore, the schools chosen for the study may not be fully representative of all schools in the district. If that's the case, the results might not be so helpful in other educational settings.

Measurement Issues: Data collection is another area where errors could creep in, such as mistakes when recording scores (given the electronic handling of data in the study, there's always a risk to data integrity). While assessment administration is generally consistent (trained SEA personnel administer the assessments to minimize such risks, standardized tests have their limits. They might not fully capture what students know and can do, leading to an incomplete picture of the intervention's effectiveness.

Considering External Influences: Lots of outside factors can influence how students perform. Factors such as socio-economic background, parental involvement, and the availability of resources at a school can all play a role. The PASS program aims to engage parents more actively, but it can't significantly influence socio-economic factors. The COVID-19 pandemic had a significant impact, particularly from March 2020 to September 2021, in rural areas like La Brea. Many students there had limited internet access, and a good number of teachers weren't ready to effectively use technology to teach the curriculum *before* the tests were given. This situation highlights all the different things that affect how well students do, and why it's essential to understand the challenges at play.

***Statistical Assumptions***

ANOVA relies on normally distributed data with equal variances across groups; this is quite critical for the analysis to be valid. If those assumptions aren't met, the results' reliability can be, well, significantly compromised, possibly leading to questionable interpretations (Verma, 2013). Outliers or non-normal distributions may skew how we understand the F-value and the P-value, which would impact the overall conclusions (Yanyan, 2008). Moreover, discrepancies in data quality—like those found in education around testing and standardized assessment time—might make it harder to meet ANOVA's assumptions, as well as those of other statistical tests (N/A, 2022). Rigorous assessment methodologies need to think about how these statistical assumptions affect educational outcomes, especially when you consider equity issues in assessment practices (Wright et al., 2021). This is crucial when assessing how well educational interventions and policies improve college and career readiness, since they are related to meaningful data analysis in this critical field.

### *Long-term Impact*

While the immediate improvements in student performance are a key focus of this study, it's worth noting that the intervention's long-term effects—specifically on student outcomes and educational equity—probably need a more thorough look. The growing consensus suggests that sustainability in educational programs is a complex issue, often depending on continuous support (Chang et al., 2024). It seems that the PASS program's success could very well depend on continuous resources and mentoring. This is an area that the current analysis may not have fully covered, potentially raising questions about just how durable these improvements will be (Keng-Ooi et al., 2023). So, while the ANOVA results certainly offer valuable insights into the PASS program's effectiveness, it's crucial to bear in mind these potential oversights and limitations when interpreting the findings, particularly as they relate to long-term educational equity. Consequently, further research and systematic monitoring become indispensable for fully ensuring the accuracy and reliability. Subsequent interventions can then be refined and adapted to address students' changing needs and systemic inequities more effectively.

## Discussion

The PASS initiative, in response to Trinidad and Tobago's educational deficits exacerbated by economic hardship in the rural areas and the COVID-19 pandemic, was initially a bold move. It aimed to improve reading and mathematics competencies in primary school students and address significant gaps in skill domains identified in regional tests. For example, Vance River RC improved on the Secondary Entrance Assessment, from a mean of 184.02 in 2023 to 191.33 in 2024—a notable difference. These findings seem to confirm earlier research that indicated experiential teacher training in collaboration with parents plays a significant role in achieving academic success. Brighton AC and the Guapo Government also reported similar trends.

In most cases, this again reinforces the argument presented by Tamimy (2015) that local community involvement has a positive impact on academic progress. That said, an alarming percentage of students still struggle, particularly with mathematics. Erin's report shows that approximately 82% of its students did not meet expectations. Gunnulfsen (2023) is also concerned. This instance demonstrates how a focused push in one area of academics can spur overall development in educational performance. Thus, it emphasises the importance of comprehensive support systems for differently abled students, in line with previous research that advocates for such systems.

Furthermore, the long-term evaluation method in the study indicates the lasting influence of such programs, as presented in Simpson et al. (2024). The PASS program is addressing needs in education and mapping new paths for securing educational equity in the future. This research highlights fruitful methods within Trinidad and Tobago's education system, which could serve as a model for other nations facing similar challenges. Ultimately, we should strive to create long-term education policy that fosters shared engagement for all students, an observation that aligns with broader discussions on educational equity. Yet, argues that, in the long run, the PASS program seeks to counteract the inherent prejudices in educational interventions that have perpetuated injustice against at-risk student populations. The findings report something beyond improved exam performance. These findings indeed indicate that prioritizing access and justice is essential for bringing about lasting educational change, as noted by Ortiz-Brizuela et al. (2020). These results position the PASS initiative as a fundamental component of an educational model designed to trigger mass action for every learner, echoing discourse on educational equity.

***Results of other scientists***

The Ministry of Education in Trinidad and Tobago launched "e-Engaging for Success" in December 2022. This followed Cabinet approval for a Remediation Program affecting 80 primary schools. Complementary actions were also slated for 26 specifically identified secondary institutions. JJJuergensen's 022) investigations into educational programs, like Preparing All Students for Success (PASS), highlight systemic roadblocks hindering equitable access for students, as described. Furthermore, the team led by Tamimy (2015) has studied inconsistencies in the execution of programs such as PASS, noting their considerable effects on academic and social inequalities experienced by underrepresented populations. Gunnulfsen (2023) focuses primarily on feedback collection combined with intensive data analysis, seeking to pinpoint systemic issues that might weaken the effectiveness of programs such as PASS.

Funding for educational projects aiming to improve academic success and aid vulnerable learners comes from entities such as the Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (EPSRC), Medical Research Council (MRC), and Science and Technology Facilities Council (STFC), as reported by Holmes, J., & Harris, B., 2010.

These scientists and groups actively contribute to initiatives aligned with PASS, aiming to improve educational outcomes, strengthen support for vulnerable students, and address persistent educational inequities, as noted.

**Conclusions**

The persistent challenges within education are at the heart of this research project, which zeroes in on Trinidad and Tobago's PASS initiative. This program aims to boost academic results while tackling inequalities widened by social factors and the lingering effects of COVID-19 (Greenaway, K., et al., 2024). Literacy outcomes have notably improved; Vance River RC, for instance, saw its SEA scores climb from 184.02 in 2023 to 191.33 in 2024. Efforts like improved teacher training, parent engagement, and consistent assessments are effectively reducing educational disparities (John, 2014). Policies promoting fairness and access, therefore, could have a positive impact across the wider academic world (Juergensen, 2022). Moreover, by showcasing the successful strategies of PASS, this report adds to the discussion about educational gaps, offering a basis for future programs supporting disadvantaged groups.

Nevertheless, institutions are still grappling with enduring issues amid the evolving education landscape. High absenteeism and uneven performance, particularly in Mathematics, persist. At Erin R.C., for instance, around 82% of students performed below the benchmark. An in-depth look at the long-term impact of these interventions is, as the research suggests, vital to determining their sustainability across different socioeconomic situations. Furthermore, integrating 21st-century skills into the curriculum is recommended for future studies, ensuring students are not just academically proficient but also ready for the complexities of modern society. Ultimately, the work here underscores the need to refine educational initiatives to create fair opportunities for all students, fostering an environment where academic success is possible regardless of background. Educational initiatives, like PASS, can thus serve as models for other regions, showing how collaborative efforts can help bridge equity gaps in education.

***Suggestions for Future Research***

Future research, generally speaking, should focus on sustaining improvements the PASS program achieved, while simultaneously addressing educational disparities the pandemic exacerbated – these

have notably impacted student outcomes across various demographics (Dwivedi et al., 2023; (yub S et al., 2024)) The research ought to incorporate transitional aspects, aligning with strategies that effectively assist 5th standard students during the critical move from primary to middle school, a transition that's often a pivotal moment academically (Rahman, et al., 2023; (Rzo Eńca et al., 2024)). Investigating the program's long-term impacts on academic and social development will provide valuable insights into program effectiveness, informing future iterations of educational interventions (Dwivedi et al., 2023; Ayub et al., 2024). Adding to this, exploring the integration of technology in teaching and learning, particularly in a post-pandemic context, is essential to identify how such tools may further enhance educational equity and overall effectiveness; this aligns with emerging trends that emphasize AI technologies transforming learning environments (Rahman et al., 2023; Rzo Eńca et al., 2024). Furthermore, introducing frameworks to assess the influence of socio-economic factors on the implementation of educational programs can yield a deeper understanding of barriers, facilitating targeted interventions supporting vulnerable student populations (Aub et al., 2024; Rzo Eńca et al., 2024). Hence, a systematic inquiry into these dimensions might illuminate pathways to foster educational success for all, ensuring the PASS program remains adaptable and reflective of the evolving landscape in education.

***Author's proposals for solving the problem***

To address the common issues found in schools, several solutions are proposed. First, ongoing professional development is vital: Teachers should receive continuous training on differentiated instruction and how to effectively use technology, especially concerning equity in education. Such methods are key to meeting varied student needs in today's digital learning environment, where resource access strongly affects learning (Rzo Eńca et al., 2024).

Furthermore, increasing the number and quality of parent-teacher meetings can build a collaborative atmosphere that bolsters student success, both academically and socially. Research backs this up, showing that active parental involvement positively influences student results and that parents play many roles in academic achievement (Emerson et al., 2012).

Moreover, efforts to cut down on absenteeism should involve strategies like providing dependable transportation for students living far away and offering rewards for consistent attendance. These steps aim to ensure fair educational access for everyone, addressing inequalities that can hold back academic progress in underserved areas.

Also, considerable investment in infrastructure is necessary to guarantee all students can use online learning resources, especially in rural areas where unequal access can impede learning (Dwivedi, et al., 2023). Ongoing support for schools, through regular visits by educational consultants, should be maintained, ensuring teachers get guidance and student progress is tracked so that teaching methods can be adjusted as necessary. Generally speaking, the PASS initiative has greatly improved student academic performance in Trinidad and Tobago, fostering a more inclusive educational setting.

The program's accomplishments showcase effective educational methods and highlight the need for a holistic and collaborative approach to education. It also acts as an example for future educational programs, potentially benefiting varied student groups by using best practices and strategies that encourage inclusivity and engagement, enhancing the educational environment overall.

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TOFCO's executive and management deserve immense thanks for their essential financial support of PASS. The program is education-based and focuses specifically on supporting vulnerable students and working towards equity in schools, as described by Esnard (2022).

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**Conflict of Interest**

None.

**Funding**

The Preparing All Students for Success (PASS) initiative, which aimed to boost student achievement through several key strategies, relied significantly on sponsorship from Trinidad and Tobago Offshore Unlimited Company (TOFCO). Specifically, PASS targeted teachers' professional growth, enhanced parental involvement, and individual support for students needing extra help. TOFCO's contribution enabled a comprehensive support system, supplying monthly stipends, essential equipment, supplies for Amazing Achievers camps; assessment materials to schools, refreshments, transportation, participation incentives, and facility upkeep (Center for Research SS et al., 2021). This financial backing isn't just about keeping PASS running smoothly; it addresses deeper educational inequalities affecting many students (Center for Equity for Learners E, 2022). In most cases, TOFCO's support helps alleviate the problems associated with unequal educational opportunities, demonstrating the importance of effective funding in promoting educational fairness and overall student success.

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