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Arts Stream into Diploma in Science? Assessing Academic Viability through CGPA and PLO Attainment

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ABSTRACT

This study examines the academic viability of Arts stream students admitted into the Diploma in Science programme at UiTM Sarawak. A total of 164 students were assessed using cumulative grade point averages (CGPA), programme learning outcome (PLO) scores, and PLO failure analysis, with comparisons made between Science and Arts stream entrants. Independent samples t-tests revealed that Science stream students achieved significantly higher CGPA and performed better in several key PLO, particularly PLO1, PLO2, PLO3, PLO5, and PLO7. However, no significant differences were observed in other PLO, suggesting that Arts stream students can perform comparably in personal growth competencies. PLO failure analysis revealed that Arts stream students faced the greatest difficulties in PLO1 and PLO2, indicating substantial struggles in foundational science skills. These challenges were associated with courses such as General Chemistry, Organic Chemistry, and Calculus, reflecting foundational knowledge in science. Despite these hurdles, Arts stream students demonstrated the ability to attain academic outcomes in line with programme requirements when given adequate support. The findings highlight the potential of widening access to science-based programmes while underscoring the need for targeted interventions, such as bridging courses and supplemental learning. Future studies should use longitudinal designs and include student-lecturer perspectives to explore non-academic factors that influence the academic success of mixed-stream students.

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1.0 INTRODUCTION

The Malaysian education system traditionally divides students into Science or Arts streams at the upper secondary school level, a practice that significantly shapes their academic readiness for tertiary education. Science stream students acquire foundational knowledge in subjects such as Physics, Chemistry, Biology, and Additional Mathematics, which are essential for success in higher education science programmes. In contrast, Arts stream students typically lack this exposure, creating potential disparities in academic readiness when transitioning into science-based fields.

Despite Malaysia's long-standing policy objective of achieving a 60:40 ratio of Science to Arts students, enrolments in pure science subjects have continued to decline. Data from the Malaysian Science and Technology Information Centre (MASTIC) highlight a downward trend in Physics, Chemistry, Biology, and Additional Mathematics since 2018, with enrolments in Additional Mathematics alone dropping by 17.37% between 2018 and 2023 (The Star, 2024).

In response to these challenges, higher education institutions have begun to widen access by admitting students from non-science streams into science-based programmes. At Universiti Teknologi MARA (UiTM), entry requirements for the Diploma in Science (AS120) were revised in 2022 to allow applicants with credit in any STEM subject, not limited to pure sciences, thereby opening pathways for Arts stream students. This policy shift reflects broader efforts to promote inclusivity and increase participation in science-related fields. However, it also raises concerns about the academic preparedness of Arts stream students and their ability to meet rigorous programme learning outcomes (PLO).

Existing literature has largely examined Science, Technology, Engineering, and Mathematics (STEM), but empirical evidence on the performance of non-science entrants in science-based diploma programmes remains limited. This study addresses these gaps by examining the academic performance of Arts and Science stream students enrolled in the Diploma in Science programme at UiTM Sarawak. Specifically, this study is guided by the following research questions:

1. Are there significant differences in CGPA between Science and Arts stream students?
2. Are there significant differences in PLO attainment between Science and Arts stream students?
3. Which specific competencies and courses present the greatest challenge for Arts stream students?

In doing so, the study seeks to determine the academic viability of admitting Arts stream students into a science-based diploma and to provide evidence-based insights for admission policies, curriculum development, and student support strategies.

2.0 LITERATURE REVIEW

2.1 Changes in Admission to Science-Based Programmes

Globally, higher education institutions are revising admission policies to widen access to science-based programmes by opening pathways for students from diverse backgrounds. These reforms are driven by the need to enhance inclusivity in STEM education while addressing persistent challenges such as the underrepresentation and the declining number of applicants from traditional Science stream school leavers (Bassford, 2024; Rosinger et al., 2025). In Malaysia, this trend has been reinforced by national policy directives encouraging universities to adopt more flexible entry requirements, enabling students without pure science qualifications to pursue science-based programmes (Andrew et al., 2024; Idris et al., 2023).

In UiTM, this shift was implemented by revising the entry requirements for the Diploma in Science (AS120). With the updated SPM curriculum and subject package options (Ministry of Education Malaysia, 2019), eligibility was expanded to include credits in any STEM-related subject, not strictly limited to Physics, Chemistry, or Biology (Table 1). This change has created opportunities for Arts stream students to enroll in this programme since October 2024 (20224) semester intake.

Table 1. Entry requirements for Diploma in Science (AS120)

Before the 20224 intake	From the 20224 intake
Pass the general university requirements with credits in: ● Mathematics or Additional Mathematics ● English **And** 2 credits and 1 pass in the following subjects: ● Physics ● Chemistry ● Biology	Pass the general university requirements with credits in: ● Mathematics or Additional Mathematics ● English ● Biology / Physics / Chemistry / Science / Additional Science / Home Science / Agriculture / Design / Sport Science / Mechanical Engineering Studies / Electrical & Electronics Engineering Studies / Aquaculture & Recreational Pets / Domestic electrical equipment repair / Landscape & Nursery / Business / Entrepreneurship Studies

Source: *Universiti Teknologi MARA, n.d.-a, n.d.-b)*

2.2 Importance of Prior Knowledge in Science-Based Programmes

Past research consistently identifies Chemistry, Mathematics, and Physics as “bottleneck” subjects, particularly for students without a prior Science background. Such courses demand abstract reasoning, quantitative skills, and cumulative knowledge structures. As Mathematics serves as a foundational tool for Physics, Chemistry, and engineering problem-solving, any deficits in math skills and knowledge could increase cognitive load and slow learning in content-heavy STEM subjects. Prior achievement in Mathematics has been shown to strongly predict subsequent participation in advanced sciences such as Physics and Chemistry (Cooper, 2023). Chemistry is often perceived as highly abstract and conceptually difficult (Johnstone, 2006). Similarly, Physics problem-solving is challenging when students must integrate and apply multiple concepts simultaneously (White et al., 2015).

Students who lack foundational science knowledge often face cognitive overload, making it difficult to master complex tertiary-level science topics. For Arts stream students entering science-based programmes, they must learn both basic and advanced concepts simultaneously, which can lead to slower learning progress and lower grades. Studies show that students with prior science coursework score significantly higher in first-year science subjects, even after controlling for general academic ability (Ahmad Fuaad et al., 2016; Sperling et al., 2024). Prior knowledge also facilitates better integration of new concepts, reduces reliance on rote memorisation, and enhances problem-solving efficiency. Ausubel’s meaningful learning theory underscores the necessity of prior relevant knowledge for acquiring new scientific concepts effectively (Ausubel, 1968).

2.3 Academic Achievement and PLO Attainment

Students from non-science backgrounds entering science-based programmes often encounter adjustment challenges, particularly due to limited prior exposure to prerequisite scientific knowledge (Gale & Parker, 2014). These knowledge gaps can hinder their ability to grasp advanced concepts, leading to lower confidence and academic performance during the early stages of study. Empirical evidence consistently highlights the role of prior academic preparation as a strong predictor of success in tertiary-level science programmes. For example, Science stream students generally attain higher CGPA compared to their Arts stream peers because of their foundational grounding in Chemistry, Biology, and Mathematics (Han & Buchmann, 2016). They also tend to score higher in PLO related to technical and analytical skills, likely due to cumulative reinforcement from prior science education (Theobald et al., 2020).

However, evidence indicates that students entering STEM programs without a strong science or mathematics background often face discipline-specific challenges. For instance, in first-year university chemistry courses, insufficient prior mathematics knowledge correlates strongly with poorer performance (Watters et al., 2018). Students with weak mathematical preparation struggle significantly in foundational science courses, contributing to higher failure rates and reinforcing their role as key barriers to STEM progression (Rylands & Coady, 2009). These findings underscore the importance of analysing CGPA and PLO differences between Arts and Science stream entrants, as undertaken in this study, to identify the precise learning domains where non-science students may require additional support.

2.4 Widening Access and Academic Standards

The expansion of admission policies to allow Arts stream students into science-based programmes reflects a broader push for inclusivity and access in higher education (Ministry of Education Malaysia, 2019). While this policy promotes equity, it also raises concerns regarding academic readiness and long-term standards. If underprepared students are admitted without adequate support, programme quality and progression outcomes may be compromised. There is also a wider policy implication: reemphasising the importance of science at the secondary level may reduce its uptake, which could ultimately affect the national STEM talent pipeline (Tinto, 2012).

Nonetheless, research suggests that widening access can be academically sustainable if supported by targeted interventions. Bridging and preparatory mathematics courses have been shown to help underprepared students adapt and perform better in science and engineering programs (Rylands & Coady, 2009). Supplemental instruction, especially in introductory STEM courses, significantly enhances student achievement and reduces failure rates (Bowen, 2000). Structured peer tutoring and mentoring similarly promote persistence and academic success by providing accessible support and collaborative learning opportunities (Stigmar, 2016). Additional studies reinforce that well-designed support interventions improve STEM retention by addressing gaps in prior preparation and easing transitions into demanding coursework (Wilson & Varma-Nelson, 2016; Vaughter et al., 2013). A recent systematic review by Palid et al. (2023) concluded that admitting non-Science students into STEM programmes is viable, provided that appropriate academic scaffolding and learning resources are implemented.

3.0 METHODOLOGY

3.1 Research Design

This study employed a quantitative, comparative research design to examine the academic performance of students from SPM Science and Arts streams enrolled in a Diploma in Science programme. The design was chosen to enable statistical comparison between the two groups across multiple indicators, including CGPA, PLO attainment, and PLO failure analysis. This approach allows for an objective evaluation of the group differences and the identification of areas that require academic intervention. The PLO description for Diploma in Science programmes is shown in Table 2.

Table 2. PLO Description

PLO	MQF2.0 Learning Outcome Domains	Programme Learning Outcomes (PLO)
PLO1	Knowledge	Able to apply systematic knowledge and understanding of Science and Mathematics fundamentals to undertake routine or non-routine Science-related tasks.
PLO2	Cognitive	Able to apply general concepts, theory, and operational principles of Science and Mathematics fundamentals to solve problems of a routine and non-routine nature.
PLO3	Practical Skills	Able to perform practical skills, methods, and procedures in conducting experiments, and operate laboratory equipment in science-related practices.
PLO4	Intrapersonal Skills	Able to increase proficiency individually or with supervisors, peers, and subordinates from different cultures.

PLO5	Communication Skills	Able to demonstrate effective communication skills, both orally and in writing, ideas, information, problems, and solutions, to others, including peers, team members, relevant stakeholders, and the community.
PLO6	Digital Skills	Able to organise a broad range of information, media, and technology applications to support study and work.
PLO7	Numerical Skills	Able to apply numerical and quantitative skills for study and work.
PLO8	Leadership, Autonomy, and Responsibility	Able to demonstrate leadership skills and collaborate with other team members with a significant degree of autonomy and responsibility, society and relevant stakeholders.
PLO9	Personal Skills	Able to demonstrate passion and confidence for independent learning and self-development for career or further education.
PLO10	Entrepreneurial Skills	Able to perform managerial and relevant entrepreneurship skills
PLO11	Ethics and Professionalism	Able to demonstrate ethical professionalism, social and cultural differences in organisational work and social environment.

Source: *Malaysian Qualification Agency (2017)*

3.2 Population and Sample

The study population consisted of all students enrolled in the Diploma in Science programme (AS120) at Universiti Teknologi MARA (UiTM), Sarawak Branch for the September 2022 (20224) intake. A total of 164 students who had completed the programme were included through total population sampling, minimising sampling bias.

3.3 Data Collection

Demographic information, including gender, academic stream, and graduation status (on time, extended) was retrieved from official institutional records to provide essential background for comparative analysis.

Academic performance data were retrieved from the institution's verified academic database, ensuring both accuracy and completeness. Key measures included each student's final CGPA, attainment scores for PLO1–PLO11, and the number of failed courses mapped to each PLO. These measures were selected to capture both holistic academic achievement and specific learning outcome performance.

3.4 Data Analysis

The data were analysed using IBM SPSS Statistics to address the research objectives. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were first generated to summarise the demographic characteristics of the sample and provide an overview of academic performance patterns. This step established the context for subsequent inferential analysis.

To compare the overall academic achievement (CGPA) and PLO attainment scores between Science and Arts stream students, independent samples t-tests were conducted. Before interpreting the results, Levene's Test for Equality of Variances was examined to determine whether the assumption of homogeneity of variances was met, guiding the choice between the pooled t-test and Welch's t-test outputs. Statistical significance was set at $p < .05$ for all tests.

In addition to mean score comparisons, the frequency of failed courses for each PLO was analysed to identify specific areas where Arts stream students may experience greater difficulty. This involved calculating group-wise means for course failures and testing for significant differences using the same independent samples t-test procedure. Effect sizes (Cohen's d) were also computed to assess the magnitude of observed differences, enabling interpretation in relation to the academic viability of admitting Arts stream students into the programme.

4.0 RESULTS

4.1 Respondents' Profiles

Table 3 presents the demographic profiles of the study sample. 122 students (74.4%) are females, and the remaining 42 (25.6%) are males. 135 students (82.3%) were from the SPM Science stream, while the remaining 29 students (17.7%) were from the SPM Arts stream. Concerning their Cumulative Grade Point Average (CGPA), 46 students (28.0%) graduated with a pointer of 3.50 and above (first class), 88 students (53.7%) graduated with a pointer between 3.00 and 3.49 (second class upper) and 30 students (18.3%) graduated with a pointer between 2.50 and 2.99 (second class lower). 105 of them (91.5%) graduated on time, while the remaining 14 (8.5%) graduated with an extension of one semester. Twenty-three students (14.0%) graduated as vice chancellor award recipients.

Table 3. Profiles of the students

Profiles	Total
Gender (n=164)	
Female	122 (74.4%)
Male	42 (25.6%)
SPM Stream (n=164)	
Science	135 (82.3%)
Arts	29 (17.7%)
CGPA (n=164)	
3.50 and above	46 (28.0%)
3.00 to 3.49	88 (53.7%)
2.50 to 2.99	30 (18.3%)
Total Semester (164)	
5 semesters (Graduated on time)	150 (91.5%)
6 semesters	14 (8.5%)
Status of Graduation	
Vice Chancellor Award	23 (14.0%)
Completed	141 (86.0%)

4.2 CGPA Achievement and PLO Attainment

An independent sample t-test was conducted to compare the CGPA achievement and the PLO attainment of students from both Science and Arts streams, and the results are illustrated in Tables 4 to 7.

Table 4. Group Statistic Table (CGPA)

Stream	N	Mean	Std. Deviation
Science	135	3.342	.2875
Arts	29	3.027	.2133

Table 5. Independent Sample t-test (CGPA)

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	5.830	.017	5.575	162	.000	.3151	.0565	.2035	.4267
Equal variances not assumed			6.747	52.465	.000	.3151	.0467	.2214	.4088

Table 4 presents the group statistics for CGPA by stream. Science stream students (n = 135) achieved a higher mean CGPA (M = 3.34, SD = 0.29) compared to Arts stream students (n = 29), who recorded a mean CGPA of 3.03 (SD = 0.21). The difference in mean values indicates that, on average, Science stream students outperformed their Arts stream counterparts in overall academic performance.

As shown in Table 5, Levene's test indicated unequal variances, $F(1,162) = 5.830$, $p = .017$ (<.05). Thus, the Welch's t-test (equal variances not assumed) was applied. The analysis revealed that Science stream students had significantly higher CGPA than their Arts stream counterparts, $t(52.47) = 6.747$, $p < .001$, with a mean difference of 0.315 points (95% CI [0.2214, 0.4088]).

Table 6. Group Statistic Table (PLO)

	Science Stream			Arts Stream		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation
PLO1	135	63.07	9.175	29	54.00	8.540
PLO2	135	63.65	11.650	29	54.79	10.848
PLO3	135	84.08	2.850	29	82.90	1.934
PLO4	105	88.58	5.993	24	88.46	4.644
PLO5	135	73.53	3.846	29	70.90	5.294
PLO6	135	83.34	3.191	29	83.48	3.269
PLO7	135	87.69	6.271	29	84.21	5.870
PLO8	135	83.08	2.980	29	82.03	3.550
PLO9	135	76.30	5.430	29	74.34	4.631
PLO10	135	79.65	6.073	29	77.62	6.505
PLO11	135	83.36	3.794	29	84.34	4.073

Table 7. Summary Result of Independent Sample t-test (PLO)

Variable	Mean Difference	t-value	df	p-value	95% CI Lower	95% CI Upper	Higher Scoring Group
PLO1 Mark	9.0740	4.889	162	.000	5.4090	12.7390	Science
PLO2 Mark	8.8590	3.759	162	.000	4.2050	13.5130	Science
PLO3 Mark	1.1850	2.134	162	.034	0.0880	2.2820	Science
PLO5 Mark	2.6290	2.535	34.615	.016	0.5230	4.7360	Science
PLO7 Mark	3.4820	2.743	162	.007	0.9750	5.9890	Science
PLO1 Fail	-3.7080	-4.617	145	.000	-5.2950	-2.1210	Non-Science fails more
PLO2 Fail	-0.7430	-2.332	131	.021	-1.3730	-0.1130	Non-Science fails more

Table 6 shows the group statistics for PLO attainment by stream. Science stream students recorded higher mean scores than Arts stream students in PLO1, PLO2, PLO3, PLO5, PLO7, PLO8, and PLO10. Comparable mean scores were observed in PLO4 and PLO6, while Arts stream students recorded a slightly higher mean in PLO11.

As shown in Table 7, significant differences were observed in several PLO scores. Science stream students scored significantly higher in PLO1 ($p = .000$; mean difference = 9.07 marks), PLO2 ($p = .000$; mean difference = 8.86 marks), PLO3 ($p = .034$; mean difference = 1.19 marks), PLO5 ($p = .016$; mean difference = 2.63 marks), and PLO7 ($p = .007$; mean difference = 3.48 marks). However, no significant differences were found for PLO4, PLO6, PLO8, PLO9, PLO10, and PLO11.

When examining the number of courses failed per PLO, Arts stream students exhibited significantly higher failure rates in PLO1 ($p = .000$; mean difference = -3.71 courses) and PLO2 ($p = .021$; mean difference = -0.74 courses). For other PLO, including PLO3, PLO5, PLO7, and PLO8, no significant differences were found between the two groups, with some outcomes showing zero variation. In the case of PLO9 and PLO10, *t*-values could not be computed as the standard deviation for both groups was zero. As for PLO11, none of the students failed.

4.3 Courses with PLO Failure

Table 8 highlights the specific courses in which Arts stream students encountered the greatest academic difficulties, as indicated by PLO failure. The results suggest that PLO1 was the most frequently failed learning outcome, occurring across all semesters in multiple subjects. In Semester 1, failures in General Chemistry (CHM131) and Pre-Calculus (MAT133) were both linked to PLO1. This trend persisted in Semester 2, with Metabolism and Cell Division (BIO150), Principles of Physical Chemistry (CHM271), and Calculus 1 (MAT183) also showing PLO1 failures. Additional PLO1 failures occurred in Optics and Waves (PHY260) during Semester 4 and Material Sciences (PHY351) in Semester 5. PLO2 failures, while less frequent, appeared in more advanced courses such as Fundamental of Organic Chemistry (CHM258) in Semester 3, Organic Chemistry II (CHM301) in Semester 4, and Introduction to Human Biology (BIO310) in Semester 5.

Table 8. Courses with PLO failure

Semester	Course Code	Course Name	Failed PLO
1	CHM131	General Chemistry	PLO1
	MAT133	Pre-Calculus	PLO1
2	BIO150	Metabolism and Cell Division	PLO1
	CHM271	Principles of Physical Chemistry	PLO1
	MAT183	Calculus 1	PLO1
3	CHM258	Fundamental of Organic Chemistry	PLO2
4	BIO320	Introduction to Biological Diversity	PLO1
	CHM301	Organic Chemistry II	PLO2
	PHY260	Optic and Waves	PLO1
5	BIO310	Introduction to Human Biology	PLO2
	PHY351	MATERIAL SCIENCES	PLO1

5.0 DISCUSSIONS

5.1 CGPA Differences - Does Prior Academic Stream Matter?

The independent samples t-test results showed that Science stream students had a significantly higher CGPA than Arts stream students, indicating that secondary school background plays a role in tertiary education achievement. Prior exposure to science subjects may enhance readiness for science-related diploma coursework. Similar findings have been reported by Freeman et al. (2014), who demonstrated that students with stronger prior academic preparation in STEM tend to outperform their peers, especially when foundational skills are reinforced. However, the moderate gap suggests that Arts students can still succeed, especially when given adequate support.

5.2 PLO Attainment - Where Do the Differences Arise?

Science stream students scored significantly higher than Arts stream students in PLO1 (Knowledge and Understanding), PLO2 (Cognitive Skills), PLO3 (Practical Skills), PLO5 (Communication Skills), and PLO7 (Numerical Skills). This pattern indicates that the largest gaps occur in foundational and applied Science competencies (e.g., analytical reasoning, experimentation, applied scientific knowledge) covered in early-stage courses. Similar observations have been made in tertiary STEM transitions, where students without prior science training face steeper learning curves in technical skill acquisition (Eitemüller & Habig, 2020; Leong et al., 2021). The implication is that curriculum adjustments, such as bridging modules, could help Arts stream students close these specific competency gaps. Conversely, no significant gaps were observed in PLO4 (Interpersonal Skills), PLO6 (Digital Skills), PLO8 (Leadership), PLO9 (Personal Skills), PLO10 (Entrepreneurial Skills), and PLO11 (Ethics and Professionalism). These competencies reflect the students' personal growth, developed through group work, projects, and co-curricular activities.

5.3 Competencies and Courses – Which present the greatest challenge for Arts stream students?

Failure rates were notably higher among Arts students in PLO1 and PLO2, indicating substantial challenges in foundational Science skills. This aligns with Eitemüller and Habig (2020), who found that students without adequate prior exposure to key scientific concepts are more likely to encounter difficulties in entry-level courses, unless bridging support is provided. Leong et al. (2021) similarly reported that misalignment between secondary and tertiary curricula in science subjects can predict early academic struggles.

5.4 Is It Academically Viable to Admit Arts Stream Students?

While the performance gap is evident, particularly in CGPA and PLO attainment, the fact that Arts stream students performed comparably in several PLO (PLO4, PLO6, PLO8–PLO11) indicates partial academic viability. However, to ensure successful progression, structured interventions such as active learning approaches and targeted academic support are essential. Theobald et al. (2020) demonstrate that active learning not only raises achievement but also reduces equity gaps, suggesting that such pedagogical strategies could make admission of Arts stream students more sustainable. This aligns with findings from Reed and Lyford (2014) and Cotner et al. (2017), who highlight that nonscience majors can demonstrate meaningful academic engagement and learning outcomes when instruction is intentionally designed. The decision to admit should therefore be coupled with a robust support framework rather than made solely on prior academic background.

The findings suggest a nuanced answer: Yes, admitting Arts stream students is academically viable, but not unconditionally. The CGPA gap and specific PLO weaknesses highlight areas needing targeted remedial support, especially in foundational science competencies. Offering bridging modules or embedded scaffolding in key technical areas can help close the gap (Eitemüller & Habig, 2020). Similar recommendations are echoed in recent studies (Alhabeeb & Rowley, 2018; Shaharoun et al., 2022), which emphasise the role of tailored academic support in improving the success rates of students entering science-based programmes from non-science backgrounds. Warner (2008) further illustrates how supplemental instruction can influence the science identities and persistence of nonscience students, particularly women, underscoring the value of structured support. Likewise, Ryan et al. (2025) show that placement tools and preparatory measures play an important role in student persistence in mathematically intensive courses, pointing to the importance of early diagnostic and bridging mechanisms.

6.0 CONCLUSION AND RECOMMENDATION

This study compared the academic performance of Science and Arts stream students in a Diploma in Science programme. The findings showed that Science stream students achieved significantly higher CGPA and outperformed Arts stream students in key learning outcomes, particularly PLO1 and PLO2. While other PLO showed comparable results, the gap in fundamental science competencies indicates that prior exposure to science subjects provides a strong advantage. PLO failure analysis further highlighted that Arts stream students faced the greatest challenges in core courses such as General Chemistry, Organic Chemistry, and Calculus, underscoring the importance of prior exposure to scientific disciplines. Despite these differences, the results suggest that admitting Arts stream students is academically viable, provided that appropriate academic support is in place.

The findings carry important implications for higher education policy and practice. While broadening access to science-based programmes can diversify student intake and address declining enrolment, admission of Arts stream students should be accompanied by targeted interventions. Early-semester bridging modules in Mathematics and foundational Science, along with sustained academic support in high-failure courses, may help close performance gaps and promote long-term success.

As this study is limited to a single cohort and relies solely on quantitative performance indicators, the results may not fully capture variation across intakes or reflect non-academic factors influencing success. Future research should adopt multi-cohort longitudinal designs and integrate student and lecturer perspectives to uncover non-academic factors such as learning strategies, motivation, and teaching practices that shape the trajectory of mixed-stream students.

7.0 CONTRIBUTION OF AUTHORS

The authors confirm the equal responsibilities for this paper and approve the final version.

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9.0 CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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