Disparities in Final Examinations Performance between Science and Arts Subjects in Secondary Schools in Tanzania

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Abstract: This study examines stream placement in secondary schools, focusing on student perceptions of subject difficulty, preferences, and factors influencing their comfort with science and arts subjects. Using mixed methods approach, the study adopted a convergent mixed methods research design and involved five randomly selected secondary schools. Stratified random sampling yielded 230 participants: 200 students (40 per school, equally divided between Form Three and Form Four) and 30 teachers (6 per school, equally representing both streams). Data collection included open-ended and closed-ended questions. The study highlights the role of Form Two National Examination results in stream placement, raising concerns about fairness, particularly when students perform similarly. It underscores the importance of aligning subject choices with students' interests while emphasizing guidance from teachers and parents. The findings challenge the assumption that science subjects are inherently more difficult, showing that subject difficulty depends on motivation, teaching quality, and the learning environment. Recommendations include transparent stream placement processes that consider students' career goals and interests, addressing disparities between public and private schools, improving resource allocation, providing counseling and support programs, dispelling myths about subject difficulty, and addressing gender stereotypes and parental pressures. These strategies aim to create an inclusive educational environment, fostering academic success and enhancing students' future career opportunities.

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1. Introduction

The issue of academic performance among students, particularly at lower levels such as primary and secondary schools, has been a longstanding topic of debate among educational stakeholders in various countries, including Tanzania. Makoye (2014) highlights that students' academic performance has become a significant concern for researchers, especially due to its noticeable decline in recent years. The concept of academic performance carries various interpretations. According to Narad and Abdullah (2016), academic performance refers to the knowledge acquired by students, as reflected in the marks assigned by teachers. They contextualize it within education as the attainment of educational goals by a student, teacher, or institution over a specific period. This performance is typically measured through examinations or continuous assessments, with the specific goals varying between individuals and institutions. Given that education plays a crucial role in producing skilled human resources, which drive economic development and address societal challenges, students are expected to dedicate significant effort to their studies. Achieving good academic results is essential for students to meet expectations, as education fosters individual growth and contributes to the broader development of communities (Tadese, Yeshaneh & Mulu, 2022).

Academic performance varies depending on circumstances, as well as organic and environmental conditions that shape skills and experiences. It is influenced by factors such as intellectual ability, personality, motivation, skills, interests, study habits, self-esteem, and the teacher-student relationship (Lamas, 2015; see also Tadese, Yeshaneh, and Mulu, 2022, p. 2). Due to these varying factors, academic performance among students in different schools has been a fluctuating phenomenon. However, most discussions and concerns have focused on the declining side of academic performance in modern educational institutions worldwide. This concern is supported by Al-Zoubi and Bani-Younes (2015), who emphasized that low academic achievement in examinations is one of the most pressing challenges faced by both students and teachers in contemporary schools. This issue has hindered the effective fulfillment of

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educational missions and objectives, highlighting the need for targeted interventions to address the problem.

For decades in Tanzania, academic performance across various levels of education, particularly at lower levels, has fluctuated significantly, with variations observed across subjects and between genders. It is common for the Secretary of the National Examination Council of Tanzania (NECTA) to announce during press releases that academic performance in a given year has either improved or declined (NECTA, 2017–2022).

For instance, an analysis of Form Four national examination results over the six years from 2017 to 2022 highlights notable changes in student performance. This study focuses specifically on the academic performance differences between students who opted for science subjects and those who chose arts subjects as their specialization. Particular attention has been paid to the top ten best-performing students during this period. The table below provides a summary of the top ten best-performing students from 2016/2017 to 2021/2022.

Table 1: Top Ten best students CSEE Results 2016/2017-2021/2022

Year	Boys	Girls	Total	Arts	Science
2016/2017	5	5	10	-	10
2017/2018	6	4	10	-	10
2018/2019	5	5	10	-	10
2019/2020	3	7	10	-	10
2020/2021	7	3	10	-	10
2021/2022	2	8	10	-	10
TOTAL	28	32	50	-	10

Source: NECTA 2017-2022

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Based on the data presented in Table 1, there is evidence of fluctuations in academic performance by gender and subject specialization, with girls often leading in overall performance. However, when analyzing subject combinations, science subjects have consistently maintained dominance. Over the past six years, the top ten best-performing students in the Form Four National Examination results have primarily been those who opted for science subject combinations rather than arts combinations.

This dominance of science subject takers in the top rankings is intriguing, especially given the widespread belief that science subjects are more challenging compared to arts subjects, which are often perceived as simpler and easier to excel in. This perception has been prevalent among students, teachers, and other educational stakeholders in Tanzania. While some agree with this belief (Kihwele, 2014), others challenge it, sparking ongoing debate about the relative difficulty and performance potential of these subject streams.

Coe, Searle, Barmby, Jones, and Higgins (2008) note that the controversy regarding potential differences in the difficulty of examinations across subjects has been long-standing and has attracted significant media and public attention. A prevailing perception is that science subjects are often the most difficult. Recently, concerns over the supply of individuals with qualifications and skills in STEM subjects (science, technology, engineering, and mathematics) have intensified this debate, adding new urgency to the discussion on subject difficulty.

According to Coe (2010), these differing views can lead to contradictory conclusions. Both perspectives are conceptually and operationally problematic. The alternative view, which posits that standards are merely a convention and cannot be objectively defined, is dismissed as insufficient. It is possible to legitimately compare the standards of different examinations, provided there is a shared construct for comparison. There is no absolute sense in which one examination is inherently harder than another—it depends on the construct being measured.

On the other hand, reflecting on the findings from a study conducted by Ndihokubwayo, Ukobizaba, Byusa, and Rukundo (2022) in Rwanda regarding subject

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choices in secondary schools, it appears that a student's higher interest in a subject matter can alter their perception of its difficulty. This suggests that each subject can either be perceived as difficult or simple based on the student's aspirations and engagement with it.

This debate is not a new phenomenon in academic research. For example, as early as 1939, Osborn conducted a study in the United States analyzing the perceptions of difficulty among American high school students. He noted that difficulty extends beyond the intellectual demands of a subject, stating that it is "complex and involves... likes, dislikes, ability, aptitude, and the teacher's personality." His study found that the hardest subjects for boys were Latin, chemistry, French/Spanish, mathematics, physics, English, history, and biology, while for girls, the hardest subjects were chemistry, physics, Latin, French/Spanish, mathematics, biology, English, history, and sociology. Notably, girls perceived science subjects to be harder than boys did (Osborn, as cited in Coe et al., 2008). Based on Osborn's findings, it can be concluded that both arts and science subjects were perceived as difficult, depending on individual factors such as interest, ability, and other personal factors.

Moreover, Osborn's findings indicated that girls perceived science subjects as much harder than boys, which contrasts with the NECTA Form Four examination results report, which shows that girls outperform boys in science subjects, as indicated in Table 1 above. This discrepancy suggests that the perception of a subject's difficulty is controversial and may vary based on individual perspectives and experiences.

In this context, we argue that the comparability of subjects as difficult or simple is subjective. Unlike other latent trait models, the Rasch model requires that all items discriminate equally. In other words, the relationship between a person's ability and their probability of success on an item should be consistent for all items. For individuals, their relative probabilities of success on different items should align with those of others in the population. Moreover, Rasch assumes that both the 'difficulty' of items and the 'ability' of persons can be measured on the same scale, and that the

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probability of a person succeeding on a particular item is entirely determined by the difference between their ability and the difficulty of the item (Coe et al., 2008).

The conflicting beliefs among educational stakeholders prompted the researchers to conduct this study, focusing on examining the factors influencing academic performance among students taking science and arts subjects in secondary schools. To achieve the primary objective of this study, the following specific objectives were formulated to provide a focused exploration from diverse perspectives: (i). To examine the criteria used for streaming students into either arts or science subject classes. (ii). To explore perceptions of academic performance between science and arts students in the final examinations. (iii). To analyze students' perceptions of the selection of arts or science subjects in relation to academic performance.

2. Research Methodology

The research methodology for this study was carefully designed to ensure a systematic and reliable approach to data collection, analysis, and presentation. A mixed-methods approach was selected, as its goal is not to replace qualitative or quantitative approaches but to combine their strengths creatively within a single study. By minimizing weaknesses and ensuring that the limitations of one approach do not overlap with those of the other, the study is strengthened (Ary, Jacobs, & Sorensen, 2010). To provide detailed insights, the study adopted a convergent mixed methods design, in which the researcher collects both quantitative and qualitative data, analyzes them separately, and compares the results to determine whether they align or diverge. The key assumption is that qualitative data offer detailed participant perspectives, while quantitative data provide measurable scores, and together they produce complementary insights (Creswell, 2014). Five secondary schools in Mbeya town were randomly selected as a representative sample. These schools were chosen because all ordinary secondary schools in Tanzania include both Arts and Science subject streams, making them suitable for comparative analysis.

The sampling process was designed to ensure balance and randomness. Stratified random sampling was employed to select students and teachers based on their

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representation in Arts and Science streams, while simple random sampling, using a dice-throwing technique, was used to select participants within these streams. The study involved a total of 230 respondents, including 40 students from each school (equally distributed between Form Three and Form Four classes, as these are specialization years) and 6 teachers per school, equally representing both streams. Data from open-ended questions were analyzed thematically, while closed-ended data were analyzed numerically. Ethical considerations were a priority throughout the study, with researchers obtaining approval from Teofilo Kisanji University (TEKU), ensuring informed consent from participants, and maintaining their privacy and confidentiality. This robust methodology ensured a focused, ethical, and meaningful investigation into academic performance differences between Arts and Science streams.

3. RESULTS AND DISCUSSIONS

This section presents and discusses the results obtained from the field based on the three specific objectives of the study. The first objective focused on examining the criteria used to stream students into either arts or science subject classes. The second objective explored the perceptions of academic performance between science and arts students. Lastly, the study examined students' perspectives on their selection into either arts or science subjects and its effect on their academic performance. Therefore, this section outlines the major findings, which contribute to the generation of the study's conclusions and recommendations. Moreover, the schools involved were identified by alphabetical letters, while both teachers and students were identified by numbers.

3.1. Criteria for Streaming Students into Subjects

The researchers aimed to examine the criteria teachers use to assign students to arts or science subject streams in secondary schools, recognizing the significant role teachers play in guiding students' subject choices and future careers. Given their professional influence, teachers can encourage or discourage students' interest in specific subject combinations. The question was directed to teachers, asking them to explain the criteria they use for placing students into subject streams, and their responses have been thematically analyzed and presented.

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Academic performance criterion

Academic performance in the Form Two National Examination Results (FTNER) is the primary criterion used by teachers in most schools to assign students to either arts or science streams. This criterion was commonly explained by teachers across all selected schools. For example, one respondent provided the following explanation:

"We place students in science or arts streams based on their performance and grades in Form Two National Examinations. Students with good grades in business subjects such as commerce and bookkeeping are placed in the business stream" (C-11).

Another respondent explained:

"In our school, we consider students' performance, as their ability in certain subjects indicates their potential to excel in a specific stream, whether science or arts. Based on my experience, this often correlates with their success in final examinations" (E-20).

Similarly, one respondent stated:

"As an academic teacher, I believe students perform better when placed in streams aligned with their strong subjects. For example, in our school, students with good grades in Kiswahili and English are placed in the arts stream, while those excelling in science subjects are placed in the science stream" (A-8).

The results regarding the academic performance criterion indicate that it is dominant in many schools. Kabigumila (2015) confirms that academic performance is the primary criterion for streaming students in Tanzanian secondary schools, particularly using Form Two national examination results to place students into specific streams. This view is supported by Kinyota (2013) and Mahende (2021). However, this criterion is only effective when a student performs well in one stream. It becomes problematic when a student excels in both streams, as teachers do not provide clear guidance on how to place such students. Mansor, Maniam, Hunt, and Nor (2016) argue that this criterion can cause students in lower ability groups to feel inferior, lack peer

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support from higher ability students, and damage their academic confidence. Butler and Weir (2013) suggest that this practice has questionable benefits and may even have harmful effects.

Student's self-interests

The researchers noted that students' self-interest was another criterion considered by teachers in some schools for placing students in subject streams. However, this criterion was more commonly used in private schools than in government schools.

One respondent stated: "At my school, we place students in the science or arts stream based on their interests. This approach ensures better performance and avoids self-blame or blaming others" (E-21).

Similarly, another respondent explained:

"As an academic teacher, I place students based on their preferred subjects while guiding them to make informed choices. For example, students interested in biology or chemistry are placed in the science stream, and those with arts preferences go to the arts stream" (A-5).

In our view, this criterion is crucial because considering students' self-interests is productive and beneficial, particularly for their future careers. If students are given the chance to align their subject choices with their interests and career aspirations, it becomes easier for them to focus, perform well, and achieve good academic results. According to Kinyota (2013), considering students' self-interests in subject selection is vital for success in their final secondary education exams. Hidi and Harackiewicz (2000) emphasize that interests and goals are key motivational factors that impact academic performance (see also Renninger & Hidi, 2016). Therefore, teachers should not place students in arts or science streams without their consent.

Availability of teaching and learning materials

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Teaching and learning was another factor that influenced students' placement into subject streams, and it was more commonly used in government schools. For instance, one participant stated:

One respondent stated: "At our school, we place students in science or arts classes based on the availability of learning materials" (C-16).

Another respondent added: "There are not enough textbooks, especially for science subjects. For example, there is no physics textbook, and even the teacher has to borrow one from students" (B-18).

Similarly, another explained: "Our science laboratory lacks the necessary facilities for experiments. We don't conduct practicals seriously—we're just joking" (A-7).

The findings reveal that teaching and learning materials, such as textbooks, practical equipment, and other resources, are insufficient in government schools, particularly when considering the ratio of materials to students. The policy of free education in public schools has led to a high enrolment of students, outpacing the number of teachers. According to Lyanga and Chen (2020), the scarcity of textbooks remains a challenge for science teachers in secondary schools across Tanzania, with students often learning more theoretically than practically. For example, the Secondary Education Development Program (SEDEP) has led to an increase in schools from about 1,977 in 2004 to over 4,000 today, yet approximately 50% of these schools lack science laboratories. Additionally, Ndalichako and Komba (2014) found that students identified the lack of textbooks, laboratory facilities, and science chemicals as key factors influencing their subject choices. The shortage of teaching and learning materials has thus limited the number of students placed in science subject streams.

Availability of teachers

The study revealed that students' interest in a subject can be influenced by various school circumstances. One significant issue identified was the scarcity of teachers, particularly science teachers for subjects like physics and chemistry, which

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affects students' subject choices. This was especially problematic in government schools, where the number of teachers was minimal compared to the number of students enrolled. One teacher from a school shared the following response:

One respondent stated: "The lack of teachers, especially science teachers, forces us to place more students in the arts stream to reduce the burden on the few science teachers" (B-12).

Another respondent added: "In my school, the number of teachers is very low, and science teachers are particularly scarce. For example, we have only one physics teacher handling classes from Form One to Form Six. This challenge limits the number of students we place in the science stream to manage the teacher's workload and maintain efficiency" (D-16).

Based on the results regarding the availability of teachers, it is evident that Tanzania faces a significant challenge due to the shortage of science teachers in secondary schools. This issue is linked to the teacher-student ratio. Educational scholars have long studied the optimal teacher-student ratio to ensure effective academic engagement and better student performance. Gourault (2023) notes that the ratio reflects teacher workload, is related to class size, and is considered an important indicator of engagement, learning ability, and classroom success. The United Republic of Tanzania's Education and Training Policy (2014) suggests a standard teacher-student ratio of 40:1. However, the shortage of science teachers is exacerbated by the limited number of students choosing science subjects, making it predictable that fewer science graduates will be employed in schools. Therefore, we believe that purposeful motivation is needed to encourage more students to choose science subjects, addressing the gap between the arts and science teacher-student ratios in secondary schools in Tanzania.

Language of instruction

Language of instruction was a factor in allocating students to either arts or science streams. Teachers noted that the use of English often limits students'

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understanding of concepts, making them dislike certain subjects. They indicated that they consider students' language proficiency when placing them in a particular stream. One teacher stated:

"The biggest challenge at our school is students' low English proficiency. We place those with better English skills in the arts stream, as they can manage essay writing and related tasks" (D-18).

Another teacher noted: "English often confuses students, especially in science subjects. For example, I have a student who excels in mathematics, physics, and chemistry but struggles with essay writing and explanation-based tasks due to poor English skills" (E-22).

Language proficiency is a crucial factor in understanding subjects, as language is inseparable from the subject matter. Banga-Nade (2016) notes that English, as the medium of instruction, presents an obstacle to learning in secondary schools and higher institutions in Tanzania. Many students lack proficiency in expressing themselves, limiting their participation, particularly in learner-centered approaches. While some students who master English excel in essays and debates, placing them in the arts stream, Ndalichako and Komba (2014) found that other students dislike science subjects due to the scientific vocabulary, which is often difficult to understand. This difficulty leads some students to prefer the arts stream. The findings suggest that students' preferences for arts or science subjects are influenced by their comfort with English. Some prefer arts due to difficulty with scientific terminology, while others find arts subjects challenging because they require more explanation compared to science subjects, which focus more on formulas and less on explanation. Therefore, we recommend improving English language proficiency in secondary schools to enhance academic performance and support better subject selection.

This section highlights the various criteria used by teachers in Tanzania to place students into subject streams. It emphasizes the complexity of balancing academic performance, ability, and individual potential when making these decisions. The findings suggest that a collaborative effort among teachers, students, and parents is

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essential to optimize the student placement process, ensuring it not only considers academic abilities but also nurtures each student's unique talents and future aspirations.

3. 2 Perceptions on Academic Performance between Science and Arts Students

This section presents the respondents' perceptions of arts and science subjects in the learning process, along with the factors contributing to higher academic performance in science compared to arts subjects, and vice versa.

3. 2. 1. Perceptions of the Nature of Science Subjects Compared to Arts Subjects in the Learning Process

In this subsection, the researchers asked students to provide their opinions on the prevailing perception that science subjects are generally more difficult compared to arts subjects. The responses to this question are presented and analyzed in Table 3.1 below.

Table 3.1: Students' response towards the nature of science subjects against arts subjects in learning process

Responses			
YES		NO	
Frequency	%	Frequency	%
131	65.5	69	34.5

Source: Field data

The results from Table 3.1 reveal that the majority of students, 65.5%, believe science subjects are more difficult than arts subjects, compared to 34.5% who disagree. These results align with Osborne, Simon, and Collins (2003), who noted that over the past twenty years, the number of students choosing science subjects has been declining compared to other subjects. However, the decline in selecting science subjects seems to be influenced by factors such as students' ability, school regulations, and societal demands.

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3. 2. 2. Factors for Higher Performance in Science Than Arts Subjects in the Final Examinations

Reflecting on the responses regarding perceptions of the nature of science versus arts subjects in the learning process, as presented in the previous subsection and tabulated in Table 4.1, respondents provided reasons for higher performance in science than in arts subjects in the final examinations. These reasons are thematically analyzed below.

They study very hard

The findings of this study revealed that many student responses highlighted this as a main theme: science students tend to study harder than arts students, often due to the nature of their subjects, which require more emphasis and practice. Respondent 23 from School B, in the arts class, commented: "Science students perform well in their final exams due to diligent study habits and hard work."

Respondent 34 from School E added: "Science students excel in exams because they study hard, actively listen to teachers, and pay attention to lessons, making them top performers."

Respondent 5 from School A stated: "Science students know their subjects are difficult, so they put in extra effort."

The findings indicate that science students tend to study harder than arts students due to the perceived difficulty of their subjects. In their study, Haolader, Hakim, Kassim, and Mubarak (2017) found that science students performed better than arts students in the overall semester final exams. This difference in performance may result from science students dedicating more time and attention to their studies. However, concluding that science subjects are more difficult than arts subjects can be misleading. We argue that the level of difficulty in any subject, whether science or arts, is subjective and depends on individual interests, abilities, learning styles, and learning environments.

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They learn by doing practical

This was the second theme observed from students' responses, where most students noted that science subjects are best learned through extensive practical work to gain mastery and experience. This approach was seen as the key factor contributing to their high performance in final examinations. Respondent 35 from School D, a Form Three arts student, stated: "Science students excel in final exams due to practical applications in science subjects."

A teacher commented: "Practical procedures enhance students' approach and confidence in explaining scientific concepts, making science students top performers in final exams each year." (E-19)

The results above are convincing, as it is commonly said that practice makes perfect. This is particularly evident for science students, who, due to the nature of their subjects, engage in numerous practical activities that enhance their efficiency, leading to strong performance in their final examinations. Twahirwa and Twizeyimana (2020) confirm that well-conducted practical work positively impacts overall academic performance. Science practicals involve three key components: learning through hearing, doing, and seeing (Motlhabane, 2013; see also Etiubon & Udoh, 2017). Practical studies are essential for academic excellence when properly implemented in teaching and learning.

Perception that science subjects are difficult

The long-persisted perception that science subjects are very difficult has been reported as one reason that motivates science students to perform better in final examinations than arts students. Respondent 5 from School A (arts stream) stated: "Science students are careful and strive for good performance because they know their subjects are harder than arts subjects."

Respondent 28 from School C (science stream) said: "Since science subjects are more difficult, we invest more energy in them, leading to better performance in final exams compared to the arts stream."

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Respondent 28 from School B (science stream) shared: "In Form One, I struggled with chemistry, scoring an F on the midterm. This pushed me to dedicate more effort to it, and I performed better in subsequent exams."

Based on the findings, the perception that science subjects are more difficult than arts subjects influenced students to invest more intellectual energy in studying science. According to Dodhy (2017), fear is a natural and common emotion that activates the nervous system, mobilizes body energy, and restructures bodily functions. He adds that fear requires a shift in mindset, breaking previously established principles, and building the commitment to move forward and plan for change. In line with Dodhy's view on the positive influence of fear, the perception that science subjects are more difficult could serve as a motivational factor, encouraging students to invest more effort in their studies compared to arts students.

Class discussion

Class or group discussion was also identified as a key factor that helped students, especially those in the science stream, perform well in their examinations. One respondent said: "As a class teacher, I organized study groups for students to help each other during private time" (E-21). Another respondent added: "I encourage students to create their own groups for discussions during preparation time" (E-18).

Group discussion is recognized as an important learning method that boosts students' morale. Green (2012) found that 90% of students believed they learn best by being active participants, and 86% enjoyed learning and working in groups. This method, however, seemed more effective for science students, as Ugwu, Jatau, and Gwamna (2020) reported that group discussion has a greater impact on students' performance in science subjects than the lecture method of teaching.

Private school attendance

This factor is based on the belief that many students in private schools opt for science subjects as their subject combination. Additionally, experience shows that most of the top ten students come from private schools. Yaacob, Osman, and Bachok (2014)

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noted that private schools attract children from affluent families and intelligent students. One respondent said: "Most science students perform well because they come from private schools" (C-37). Another added: "Students from private schools get better treatment than those in government schools" (E-87).

Reflecting on the results, the consistently high academic performance in private schools remains surprising, especially when compared to public schools. This is particularly striking in urban areas, where public school staff are well-staffed and better paid than their counterparts in private schools (Rong'uno, 2017). Rong'uno's study revealed that despite significant government investment in public schools, private schools still outperform them. This indicates that private schools have consistently performed better academically than public schools.

Privileges during examinations' marking

Respondents, particularly arts students, expressed the opinion that science students receive preferential treatment in exams due to the long-standing belief that science subjects are inherently difficult. They argued that during the examination marking process, science markers tend to offer more favourable opportunities for students to pass compared to arts students. One respondent from the arts stream said: "It seems that NECTA favors science students in final exams, possibly due to the perceived difficulty of science subjects" (D-72). Another added: "Science students appear to receive preferential treatment in exams, possibly because arts subjects are seen as easier and their students less committed" (A-14).

This factor, based on supporting findings, is unrealistic and subjective, as it is impossible to prove. Final examination marking follows a procedural process with multiple stages of supervision, involving examiners and a principal/chief examiner. According to the International Baccalaureate Organization (2020), the principal examiner ensures the marking standard for a subject component, and all examiners must follow this standard to ensure consistent outcomes for all candidates, regardless of the examiner. While acknowledging the principles of examination marking, we emphasize

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that the suggestion that science students receive preferential treatment in final examinations is not substantiated.

In conclusion, the superior performance of science students over arts students in Tanzania's final examinations is influenced by various factors. However, arts students can also perform better than science students, depending on different factors. Both science and arts subjects can be perceived as easy or difficult, depending on the challenges involved. Further research and dialogue are needed to better understand the disparities in academic performance between science and arts students in Tanzania, and to challenge the notion that science subjects are inherently more difficult than arts subjects.

3. 2. 3. Factors for Poor Performance in Arts than Science Subjects in the Final Examinations

This subsection presents various factors suggested as reasons for the poorer performance in arts compared to science subjects in the final examinations, despite the perceptions outlined in Table 4.1 regarding the nature of science and arts subjects in the learning process. These factors are thematically analyzed as follows.

Poor Motivation for Success

Based on the results, the majority of respondents from the arts stream identified a lack of motivation from those around them, including parents/guardians, fellow students, and teachers, as a factor influencing their poor performance in final examinations. Teachers tend to place more emphasis on science subjects, viewing them as more difficult and crucial for future careers. Consequently, students taking arts subjects are often disregarded due to the persistent perception that these subjects are simpler and less demanding for future careers, leading to insufficient focus and support for their development. One respondent explained: "My family says arts graduates have limited job opportunities, and by choosing arts, I'm likely to end up jobless like my siblings" (A-20). Another added: "I have a brother who studied arts, but now he's just a fruit vendor with no job prospects" (A-15). A third student shared: "My peers

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constantly discourage me from studying arts, claiming it's for lazy people, and I struggle to see its value" (D-71).

The results indicate a lack of motivation among arts students, which likely leads to diminished hope for their future and less investment in their studies, ultimately causing poor performance in final examinations. These students lack support from those around them, particularly role models (see also Ntawigaya, 2021: 8). According to Al-Zoubi and Bani-Younes (2015), low academic achievement has negative effects on both families and communities. Motivation is a crucial internal factor influencing academic performance, as noted by Mauliya, Relianisa, and Rokhyati (2020). Without both internal and external motivation, arts students are more likely to underperform. Society must value both scientists and artists to foster motivation and improve academic outcomes for arts students.

Examination Stress

Examination stress has caused many students, especially arts students, to perform poorly in their final examinations, as indicated by the study findings. One student from the arts stream said: "I feel fearful before exams, and I don't even know why" (B-30). Another shared: "I fear my answers may be wrong or that I'm writing the wrong responses" (C-53). A third respondent explained: "Last term, I wasn't well prepared, so I worried the exams would be difficult" (E-86).

Lack of adequate preparation among arts students is a key factor contributing to anxiety and poor performance in examinations. This anxiety often leads to unsatisfactory results. On the other hand, some arts students may relax, assuming their subjects are easier than those of their science counterparts. Ebele and Olofu (2017) suggest that students with good study habits tend to experience less stress, while anxious students are often procrastinators who come unprepared. However, examination stress affects both arts and science students. Ali (2022) notes that exam periods are stressful for all students.

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To address this, Mohapatra, Panigrahi, and Rath (2012) recommend prevention measures such as systematic preparation, time management, maintaining a healthy lifestyle, adequate sleep, regular exercise, and a balanced diet. Students should avoid anxiety-inducing discussions, arrive on time for exams, and approach the exam with a positive attitude. It is important to read and understand the questions, answer within the allotted time, prioritize solvable questions, and leave time for revision. Post-exam discussions should be avoided. Therefore, examination stress is a common challenge for all students, regardless of their subject combination.

Poor Self-study Planning

Failure in self-study planning was also identified as a key factor contributing to poor academic performance among many arts students. Many students lack a clear and strategic plan, such as a timetable, to help them manage their study time effectively. One teacher reported: "Most arts students lack an effective self-study routine, resulting in poor academic performance" (A-01). Another teacher said: "In my experience, arts students lack a well-structured plan for managing their subjects" (D-19).

Based on the results and our experience in the education sector, we have often heard students say, “I do not want to be busy like those taking science.” This reflects poor time management and self-study planning, which ultimately leads to failure in final examinations. According to Ebele and Olofu (2017), self-study habits are crucial for academic success. They argue that if neglected by students, teachers, administrators, parents, guardians, school counselors, and the government, poor performance in exams will continue to grow and worsen.

In concluding this subsection, we agree that poor motivation, examination stress, and lack of self-study planning have negatively affected academic performance among arts students. However, we believe these factors are not limited to one academic discipline and can affect students across various fields. Therefore, it is essential for teachers and educational stakeholders to address these factors through targeted support and resources that benefit all students, regardless of their subject combinations, as all are affected by these challenges.

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4.4 Students' Perceptions Towards Selection of Either Arts or Science Subjects

This subsection aimed to investigate students' responses regarding their preference for studying in their streams and the factors behind their responses, as shown in Table 4.2 below.

Table 4.2. Students' response to whether they like or dislike to study in their streams

Responses			
YES		NO	
Frequency	%	Frequency	%
40	70	60	30

Source: Field data

The results in Table 4.2 above show that about 70% of students like their streams, while 30% are not comfortable studying in their respective streams. These responses include students from both streams, indicating that the majority of students in either the arts or science stream are comfortable. Those who expressed liking their streams provided the following reasons, as thematically analyzed below.

Optimism for Employment

Employment optimism was one of the factors behind the preference for subject combinations among students who enjoyed their choice. Respondent 12 from School A, a Form Four arts student, said: "I chose these subjects because they will help me secure a job and maintain a high standard of living." Another respondent added: "I chose science subjects for better employment opportunities" (B-10). A student from the arts stream said: "I am studying arts subjects to become a successful and wealthy politician" (E-80).

The results show that the majority of students were comfortable with their subject combination due to their positive outlook on employment prospects after graduation. Ndihokubwayo et al. (2022) report that both science and social science (arts) students view their combinations as pathways to careers in business management,

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politics, law, and leadership. For example, science students aspire to become doctors, social science students aim to become entrepreneurs, and language students seek careers as interpreters. Ndihokubwayo's findings from Rwanda confirm that employment optimism is a significant factor in subject combination selection among secondary school students across countries.

Good Performance of the Subjects

The criterion of good performance in subjects has been identified as an influencing factor in students' placement in either arts or science streams. Respondent 13 from School A said: "I chose arts subjects because I performed well in this stream compared to science subjects in the Form Two National Examination, and I have a genuine interest in this field, which motivates me to study hard." Another respondent explained: "I got good grades in History, Geography, English, and Kiswahili, and I continue to perform well in these subjects, so I am in the arts stream" (C-51). Respondents in the science stream cited good performance as the reason for their placement and continued success. One respondent wrote: "I am in the science stream because I consistently score high marks in science subjects and enjoy practicals. Learning through hands-on experience is particularly enjoyable for me" (C-52).

The results indicate that, in addition to good academic performance, students' internal motivation towards their chosen subject combinations was a key factor in the selection of either the arts or science stream, and they continued to maintain their placement. Kabigumila (2015) observed that in Tanzania, the primary criterion for streaming students in secondary schools is academic performance, particularly based on Form Two national examination results (see also Kinyota, 2013; Mahende, 2021). His study also revealed that students are streamed according to their academic abilities, which often align with personal interests, as these interests enhance their abilities in specific subjects. The findings show that students who were placed in a particular stream due to good performance maintained that status, suggesting they were comfortable in their respective streams. According to Drolia (2021), a subject should match a student’s personality, strengths, and future aspirations, as each student is

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unique, and the "one-size-doesn't-fit-all" approach is not ideal. Cuff (2017) also recommends that when students enjoy a subject, they are more likely to choose it and find it less difficult, as they can engage more effectively with the course material. Based on these findings, we believe that while academic performance is a valid criterion for selecting subject combinations, students' internal interests should also be considered.

The Needs of Society

The demands of society play a significant role in influencing students to choose specific subject combinations. These combinations aim to equip students with the expertise needed to address existing gaps in society. If a society lacks personnel in a certain field, students may be influenced to select relevant subjects to help meet the needs of that field. Respondent 21 from School B, a Form Four student, explained:

"I am interested in studying science subjects to become a medical doctor. In our society, many people need help, and I want to provide that as a doctor. My current education level limits my ability to support them, which is why I've chosen science subjects. They will help me acquire the knowledge and skills to make a meaningful impact in my community."

On the other hand, a student from the arts stream expressed:

"I've noticed our society's discrimination, particularly against those lacking financial resources. I chose arts subjects to become a lawyer and address this injustice. My goal is to use my education and legal expertise to help those suffering from humiliation and discrimination due to their economic status. My passion makes me feel comfortable in the arts stream" (D-70).

The findings show that societal demands at a particular time play a crucial role in the selection and enjoyment of subjects, with the future goal of addressing existing gaps in society. Zare-ee and Shekarey (2010) confirm that social demands significantly influence students' subject choices. Since one of the fundamental aims of education is to address social problems, we suggest that current societal needs and gaps should be considered when advising students on their subject combinations. According to Uemura

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(1999), schools have a responsibility to prepare students to contribute to society's betterment by equipping them with the necessary skills. Therefore, this factor is essential in guiding students as they choose their subject combinations.

On the other hand, those who expressed dislike for their arts or science streams provided the following reasons for their positions:

Difficultness of the Subjects

The findings reveal that many students do not enjoy their placement in their current streams. However, most were placed based on their good performance in the Form Two National Examination. Some students perform well in all subjects and are placed in either arts or science streams based on academic performance, without their consent. This has led to minimal enjoyment of their chosen stream and, at times, poor performance in their current class. One respondent from the science stream said: “I performed well in physics and chemistry, so I was placed in the science stream. However, I don’t want to pursue it because I find these subjects difficult, even though I did well in them in the Form Two National examination” (C-62).

Another respondent from a different school commented: “I’m not comfortable in the science stream, even though I scored good grades in science in the Form Two final exams. I struggle with the calculations, especially in physics, and I'm unsure if I can get good results in my final exams” (A-04).

On the other hand, some students also find arts subjects challenging. One student explained: “I scored well in both arts and science subjects in the Form Two National examination, but I preferred science. I don’t enjoy arts subjects because they require a lot of essay writing, especially in history and language, which is difficult for me and demands a lot of effort, especially during exams. Honestly, I find arts subjects more difficult than science” (D-58).

Reflecting on the findings, it shows that students' preferences were not considered in streaming. The only factor used to place them into either arts or science streams was academic performance. However, this criterion becomes weak when a

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student demonstrates strong ability in all subjects, offering them a broad range of options to choose the stream that aligns with their interests, rather than being placed based on other factors. Streaming without students' consent leads to difficulties in their studies. It is important to note that the perception of difficulty exists in both streams. Cuff (2017) found that students recognized how perceptions of subject difficulty influenced their choices, with some deliberately choosing "easier" subjects or avoiding "difficult" ones. Therefore, we recommend that students' consent be considered, especially for those who demonstrate strong abilities in both streams, to ensure they are happy with their stream, regardless of their academic records in previous assessments.

Little or no Relevance to the Future Career

Some respondents stated that they are not comfortable with their streams because their subject combinations do not align with their dreams. One student from the arts stream wrote: “I’m uncomfortable with my combination because I observe that arts graduates struggle to find jobs compared to those with science degrees. Many arts graduates are jobless and feel hopeless compared to their science counterparts” (B-25).

On the other hand, one student from the science stream wrote: “Although I performed well in both subjects and was selected to study science, my true interest lies in becoming a lawyer, not a scientist” (B-19).

Reflecting on the results, it is clear that if a student is not happy with their subject combination, they may not perform well in those subjects. A student's interest in a subject fosters comfort and encourages diligent study. Harackiewicz, Smith, and Priniski (2018) argue that interest is a powerful motivator that energizes learning, guides academic and career paths, and is essential for academic success. Conversely, if a student is not comfortable with a subject, their interest wanes, leading to poor performance. This can result in long-term setbacks. Therefore, it is crucial to consider students' interests when streaming.

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The Issue of Gender Stereotypes

Gender stereotypes, which oversimplify and generalize beliefs about people, often lead to unfairness and inaccuracies. This can result in biased judgments and discrimination, contributing to discomfort for some students in their chosen streams. One student from the arts stream described:

"My friends often tell me, 'How will you study arts subjects, being a man? Arts are for girls. If a man studies arts, he has feminine traits.' These discouragements have reduced my efforts, leading to poor exam performance. I have even abandoned science, losing my sense of direction" (C-36).

On the other hand, a female student wrote: "At our school, there are very few girls studying science, so they form close friendships with boys, especially during academic discussions. Being close to boys makes us disliked by the girls in arts, who outnumber us. They say we have a dual gender. This situation lowers the morale of girls studying science" (E-71).

These responses show that gender stereotypes undermine students in both streams. Scholars have reported on such traditional stereotypes. For example, Nicolao (2014) notes that stereotyped perceptions lead students to choose careers based on tradition. Males tend to dominate subjects perceived as masculine, aiming for related careers, while females often gravitate toward subjects considered feminine. Mathematics and science subjects, like physics and chemistry, are seen as masculine, while arts subjects are viewed as feminine. Jin (2023) explains that preconceived notions about women's abilities have led to their exclusion from STEM fields. He further notes that girls are more likely than boys to major in "less profitable" fields like literature and art, despite having the potential to succeed in STEM. Nicolao's and Jin's findings align with the stigmatization reported in this study. Therefore, we recommend that students should be encouraged to choose subject combinations based on interest, regardless of gender, as long as they have the ability to succeed in those subjects.

Parents and guardians' influences

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Some students reported that their choice of subject combinations, whether arts or science, was influenced by their parents or guardians, rather than their own preferences. This external influence has led to discomfort in their streams. One student from the science stream wrote:

"I am studying science because my parents, both doctors, forced me to. However, I have no interest in medicine; my true passion is acting. As a result, being forced to study science, I am not performing well" (E-16).

On the other hand, a student from the arts stream said: "My uncle pressured me to study arts to become a lawyer for better employment and wealth. Despite my passion for architectural engineering, he insisted on arts subjects, threatening to withhold tuition support. This pressure has negatively affected my performance because I am studying subjects that don't align with my interests" (D-10).

These findings highlight that pressuring children to study subjects aligned with their parents' interests does not support the pursuit of their own dreams. Halim, Abd Rahman, Zamri, and Mohtar (2018) confirm that some parents impose high expectations on their children, forcing them to pursue fields that are not of their choosing or interest. We believe that this type of parental influence frustrates children's personal desires, leading to less effort in studying these subjects. Halim et al. (2018) recommend that parents should understand their children's interests and stay attuned to their development, enabling them to take effective actions to support their children's future careers.

Conclusion and Recommendations

In conclusion, the study highlights the complexities surrounding stream placement, student perceptions of subject difficulty, and the factors influencing students' preferences and comfort levels. While the use of Form Two National Examination results offers objectivity, concerns about fairness and transparency persist, especially when students perform similarly. The importance of considering student interests is clear, but it must be complemented by guidance from teachers and parents,

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as well as addressing systemic disparities between schools. The study also challenges the perception that science subjects are inherently more difficult, emphasizing that subject difficulty is influenced by factors such as motivation, teaching quality, and the learning environment. Additionally, the research underscores the need to consider students' diverse experiences and provide tailored support to empower them in their academic journeys. Ultimately, the findings call for a more inclusive approach to stream placement and academic support, ensuring equitable opportunities for all students to succeed. Therefore, we recommend the following to educational practitioners and researchers:

i. Teachers should implement a well-structured, transparent system for stream placement, ensuring students, parents, and stakeholders understand the criteria, especially for those excelling equally in both science and arts subjects.

ii. Teachers should offer opportunities for students to express concerns about their stream placement and receive guidance through counseling or student forums, addressing individual issues and promoting better alignment with students' needs.

iii. The streaming process should integrate students' interests, with input from both teachers and parents, aligning choices with students' career goals and societal demands. Regular assessments should be conducted to ensure the stream placements reflect students' evolving interests.

iv. The government should reduce resource disparities between public and private schools by allocating more resources to government schools, particularly in recruiting qualified teachers and ensuring access to teaching materials, especially in science subjects.

v. Language support programs should be introduced for students who struggle with the language of instruction, ensuring that language proficiency does not hinder academic success or stream placement.

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vi. Schools and homes should work to dispel the notion that science is inherently more difficult than arts, emphasizing that subject difficulty depends on various factors, such as individual ability, motivation, and teaching quality.

vii. Strategies such as study skills workshops and personalized academic support should be implemented to help arts students manage exam anxiety and improve their study habits, fostering their academic success.

viii. Schools should create an environment where students feel comfortable expressing their preferences and concerns regarding stream placements, encouraging open dialogue and active participation from both students and parents.

ix. Efforts should be made to tackle gender stereotypes and parental pressures that influence students' comfort with their stream choices. This can be achieved through awareness campaigns and promoting inclusive educational practices.

x. Hence, implementing these recommendations will help create inclusive, supportive educational environments that address the complexities of stream placement, ultimately enhancing students' academic experiences and future career prospects.

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