



Correlation of students' performance in basic applied mathematics and accountancy in advanced level secondary school from 2017 to 2024: A case study of four secondary schools in the Northern Zone of Tanzania Mainland

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ABSTRACT

This research examined the performance of Basic Applied Mathematics (BAM) students in four advanced secondary schools situated in northern Tanzania over an eight-year span from 2017 to 2024, utilizing a systematic quantitative methodology. Essential indicators such as pass rates, absenteeism, and failure rates were assessed to uncover trends that could guide educational policies and instructional methods. Grounded in the Transfer of Learning Theory, this study investigated how students utilize their previous mathematical knowledge in new situations, especially in relation to their performance in accounting (AC). The study involved the four Advanced Secondary Schools within the Northern Zone of Tanzania. The correlation analysis shows critical joins between BAM results and AC outcomes, uncovering a solid positive relationship between BAM disappointment rates and both BAM disappointment rates ($r = 0.72$) and AC pass rates ($r = 0.74$). Negative correlations were found between BAM failure rates and AC pass rates ($r = -0.46$), as well as between BAM failure rates and AC pass percentages ($r = -0.59$). Additionally, a weaker positive correlation ($r = 0.33$) and a weak negative correlation ($r = -0.10$) were identified among various performance metrics. These results emphasise the variations in academic achievement affected by students' capacity to transfer learning, highlighting the necessity for focused interventions to bolster foundational skills in BAM and improve overall academic performance.

Keywords: Accountancy, Advanced Level Secondary Education, Basic Applied Mathematics, Students' Achievement

I. INTRODUCTION

Basic Applied Mathematics (BAM) is a fundamental element of contemporary education and innovation, acting as a link between theoretical ideas and practical uses. Worldwide, Basic Applied Mathematics is important in addressing intricate issues across various fields, including engineering, economics, healthcare, and environmental science (Cleary et al., 2022). The focus on mathematical modeling and analytical reasoning is essential in both academic and professional contexts because it gives students the critical abilities they need to understand and impact dynamic systems (Odo et al., 2025).

Basic Applied Mathematics (BAM) is regarded as a foundational subject in advanced secondary education in developing nations like Tanzania. It cultivates the problem-solving, financial literacy, and logical thinking abilities necessary for the advancement of the country (Salsabila et al., 2024). According to Mazana et al., (2020), BAM is particularly crucial for students who do not pursue advanced mathematics but require mathematical literacy to excel in subjects like accounting, economics, and commerce.

Despite its importance, student performance in BAM and related subjects like accounting still varies. These differences often reflect varying degrees of conceptual understanding, instructional quality, and student engagement (Ratu et al. in 2025). The uneven BAM and accounting success rates reported by Tanzanian schools like Arusha Secondary, Umbwe, Usangi Day, and Weruweru point to more serious pedagogical issues.

This study examines the potential relationship between students' performance in accounting, the dependent variable, and their performance in basic applied mathematics, the independent variable. The study examines how prior mathematical knowledge either helps or hinders academic achievement in related disciplines, and it is based on the Transfer of Learning Theory (Davids et al., 2020). By looking at this relationship, the study hopes to provide information for focused interventions that improve instructional strategies and learning outcomes for students.

1.1 Statement of the Problem

Students in Advanced-Level Secondary Schools, famous by the name A-level in Tanzania, demonstrate inconsistent performance between Basic Applied Mathematics and Accountancy. This inconsistency remains despite Basic Applied Mathematics being essential for financial and scientific fields. From 2017 to 2024, academic records for 4 secondary schools in eight years consecutive show notable disparities in achievements across the two subjects namely Basic Applied Mathematics and Accountancy in Northern Zone of Tanzania. These disparities raise questions about how Mathematical skills affect success in the Accounting subject. Both subjects require analytical thinking and numerical proficiency. However, the connection between performance in Basic Applied Mathematics (BAM) and Accountancy is still largely unexplored. This lack of understanding hampers teachers from developing integrated teaching strategies. Schools might also miss opportunities to align curricula and improve students' performance. Variations in teaching methods, student engagement, and resources further complicate the issue (Haji, 2024). The study aims to examine this correlation to support better teaching practices and improve academic outcomes.

1.2 Research Objective

To examine the correlation of students' performance in Basic Applied Mathematics (BAM) and Accountancy subjects in Advanced Level Secondary Schools.

II. LITERATURE REVIEW

2.1. Theoretical Review

2.1.1 The Transfer of Learning Theory

This study was anchored in the Transfer of Learning Theory, which highlights how knowledge and skills acquired in one discipline can be applied to another. In this case, the knowledge gained in Basic Applied Mathematics (BAM) supports learning in Accountancy. A strong foundation in basic mathematics enhances students' comprehension of accountancy concepts (Guinsod, 2025). This demonstrates a positive transfer of learning between subjects. When students perform well in BAM, they also tend to excel in Accountancy, due to the close relationship between the skills developed in BAM and those required for Accountancy.

2.1.2 Empirical Review

The relationship between successful mathematics instruction and students' long-term academic achievement has been the subject of numerous studies. According to Pauli (2000), researchers can find recurrent patterns that affect learning outcomes by looking into sustained achievement in mathematics. Teachers can improve their pedagogical approaches and ultimately create more effective teaching strategies by using the data-driven insights that these analyses offer. Particularly in fields like accounting, which require a high level of numerical competency, these instructional enhancements are pertinent (DaRosa et al., 2011)

According to Munna and Kalam (2021), this correlation is further supported by the necessity of updating traditional teaching techniques in order to improve student engagement and comprehension. Their research highlights the quantifiable relationship between high school Mathematics proficiency and overall academic achievement. When taken as a whole, these studies show a steady correlation between excellent instruction, student comprehension, and mastery of numeracy skills necessary for future academic and professional endeavors.

Students with higher scores in Basic Applied Mathematics performed noticeably better in the Accountancy course, according to the study Mathematics as a Predictor of Accountancy by Villamar A. et al., 2020. This contributes to accounting's numerical and analytical character, which is entirely dependent on abilities like estimation, computation, and logical thinking.

Success in subjects related to accounting is correlated with mathematical proficiency, according to a growing body of research. Ahinful et al. (2019) found that a major obstacle to students' performance in accounting is their ongoing inability to grasp fundamental mathematical ideas. These challenges frequently make it more difficult for students to complete numerically demanding assignments, which are crucial for accounting education.

Due to the discipline's reliance on analytical problem-solving and quantitative reasoning, Villamar et al. (2020) emphasize the fundamental role of mathematical proficiency, pointing out that a strong performance in mathematics is a significant determinant of success in accounting. The significance of strengthening mathematical abilities to enhance academic performance in accounting programs is highlighted by these findings taken together.

The relationship between focused educational interventions and enhanced academic performance has been highlighted by earlier research. Addressing systemic learning barriers requires improving teaching methods and making sure that educational resources are distributed fairly, according to Zickafoose et al. (2024). According to their findings, learning environments where resources are allocated appropriately and instructional methods are tailored to learners'

needs tend to have higher levels of student engagement and achievement. Expanding on this association, new longitudinal studies carried out in Tanzania's Northern Zone provide a more thorough empirical viewpoint.

According to a study by Gumapac et al. (2024), Mathematics proficiency, particularly in computation and estimation, is a key indicator of success in math and related fields like accounting. Interestingly, unless combined with solid foundational mathematics skills, study habits by themselves had no discernible effect on performance.

III. METHODOLOGY

3.1 Research Design

The study applied a quantitative design due to the numerical data that were collected and applied. According to (Weyant, 2022), this design allows the researcher to apply quantitative data at once and organize these data separately. The aim is to enable the researcher to have the capacity to comprehend the research problem (Teddlie, 2010)

3.2 Targeted Population

The study aimed to study the correlation between Basic Applied Mathematics and Accountancy subject among four secondary schools namely Arusha Secondary School in Arusha region, Weruweru Secondary, Umbwe Secondary and Usangi Girls' Secondary School in Kilimanjaro region located in Northern Zone of Tanzania.

3.3 Study Location

The researcher chose to conduct this study in the Arusha and Kilimanjaro regions, focusing on four advanced secondary schools where Accountancy and Basic Applied Mathematics subjects are taught.

3.4. Sampling Technique and Size

A researcher used a non-probability sampling technique in four (4) secondary schools in the Northern Zone of Tanzania to examine the correlation between Basic Applied Mathematics for 8 consecutive years from 2017 to 2024. In this type of sampling, purposive and convenience sampling techniques were used in which individuals were selected based on their judgment of who would be selected, the most useful and the easiest to reach. The size of the population was obtained through official records or databases using an online database (i.e from the National Examination Council of Tanzania-NECTA).

3.4 Data Collection Methods

The researcher employed secondary data collection methods to gather the required information for the study. Specifically, quantitative data were obtained from an online database managed by the National Examination Council of Tanzania (NECTA). This data included examination results and other relevant academic records. By utilizing secondary data, the researcher was able to access a large, reliable dataset that facilitated comprehensive analysis of students' achievement in various subjects.

3.6 Statistical Data Analysis Procedures

Exploratory data analysis (EDA) techniques were applied to the collected data. The researcher carefully examined the dataset to identify underlying patterns, relationships, and trends among the variables of interest.

IV. FINDINGS & DISCUSSION

4.1 Descriptive Statistics

Table 1 shows summary of the data from the four schools from 2017 to 2024 collected from the National Examination Council of Tanzania-NECTA .

Table 1*Summary of the data from the four schools from 2017 to 2024*

| Year | School | Registered | Pass | Absentees | Fail in Bam | Pass in Accountancy | % rate failure BAM | % rate pass AC |
|------|-------------|------------|------|-----------|-------------|---------------------|--------------------|----------------|
| 2017 | Arusha Sec | 47 | 47 | 0 | 32 | 39 | 0.68 | 0.83 |
| 2017 | Umbwe Sec | 180 | 179 | 1 | 125 | 166 | 0.69 | 0.92 |
| 2017 | Usangi Girl | 11 | 11 | 0 | 0 | 11 | 0.00 | 1.00 |
| 2017 | Weruweru | 100 | 100 | 0 | 37 | 98 | 0.37 | 0.98 |
| 2018 | Arusha Sec | 32 | 32 | 0 | 11 | 31 | 0.34 | 0.97 |
| 2018 | Umbwe Sec | 175 | 175 | 0 | 119 | 173 | 0.68 | 0.99 |
| 2018 | Usangi Girl | 15 | 15 | 0 | 3 | 15 | 0.20 | 1.00 |
| 2018 | Weruweru | 89 | 89 | 0 | 16 | 89 | 0.18 | 1.00 |
| 2019 | Arusha Sec | 42 | 42 | 0 | 8 | 41 | 0.19 | 0.98 |
| 2019 | Umbwe Sec | 184 | 178 | 8 | 123 | 167 | 0.67 | 0.91 |
| 2019 | Usangi Girl | 11 | 11 | 0 | 0 | 11 | 0.00 | 1.00 |
| 2019 | Weruweru | 128 | 128 | 0 | 12 | 128 | 0.09 | 1.00 |
| 2020 | Arusha Sec | 25 | 24 | 1 | 9 | 24 | 0.36 | 0.96 |
| 2020 | Umbwe Sec | 127 | 127 | 0 | 64 | 126 | 0.50 | 0.99 |
| 2020 | Usangi Girl | 22 | 22 | 0 | 1 | 22 | 0.05 | 1.00 |
| 2020 | Weruweru | 106 | 106 | 0 | 13 | 106 | 0.12 | 1.00 |
| 2021 | Arusha Sec | 39 | 38 | 1 | 18 | 38 | 0.46 | 0.97 |
| 2021 | Umbwe Sec | 120 | 120 | 0 | 14 | 120 | 0.12 | 1.00 |
| 2021 | Usangi Girl | 24 | 24 | 0 | 0 | 24 | 0.00 | 1.00 |
| 2021 | Weruweru | 125 | 125 | 0 | 32 | 125 | 0.26 | 1.00 |
| 2022 | Arusha Sec | 26 | 26 | 0 | 23 | 26 | 0.88 | 1.00 |
| 2022 | Umbwe Sec | 121 | 121 | 0 | 31 | 121 | 0.26 | 1.00 |
| 2022 | Usangi Girl | 24 | 24 | 0 | 0 | 24 | 0.00 | 1.00 |
| 2022 | Weruweru | 94 | 94 | 0 | 13 | 94 | 0.14 | 1.00 |
| 2023 | Arusha Sec | 40 | 40 | 0 | 12 | 40 | 0.30 | 1.00 |
| 2023 | Umbwe Sec | 133 | 133 | 0 | 28 | 133 | 0.21 | 1.00 |
| 2023 | Usangi Girl | 30 | 30 | 0 | 2 | 30 | 0.07 | 1.00 |
| 2023 | Weruweru | 113 | 113 | 0 | 3 | 113 | 0.03 | 1.00 |
| 2024 | Arusha Sec | 38 | 38 | 0 | 8 | 38 | 0.21 | 1.00 |
| 2024 | Umbwe Sec | 122 | 122 | 0 | 42 | 122 | 0.34 | 1.00 |
| 2024 | Usangi Girl | 24 | 24 | 0 | 5 | 24 | 0.21 | 1.00 |
| 2024 | Weruweru | 99 | 99 | 0 | 16 | 99 | 0.16 | 1.00 |

From the above table, the interpretation regarding the data, failure rates in Basic Applied Mathematics (BAM) and Accountancy subjects for the mentioned schools over the number of the years stated below.

Arusha Secondary School

In 2017, Arusha Secondary School faced significant challenges in Basic Applied Mathematics (BAM), with a failure rate of 68%. This statistic highlighted considerable difficulties among students in grasping the subject matter, raising concerns within the school community. However, by 2019, a notable shift began to take place. The failure rate decreased by 19%, signalling promising progress for both students and educators. The positive trend continued, and by 2024, the failure rate had further declined by 21%. This steady improvement reflected the dedicated efforts of teachers and students alike to enhance understanding and proficiency in mathematics. The downward trend in failure rates marked a clear path towards academic progress and signified a remarkable turnaround in students' educational experiences at Arusha Secondary School.

Accountancy results at Arusha Secondary School have mirrored this pattern of success, with pass rates showing consistent and robust growth. By 2023 and 2024, the pass rate reached a perfect score of 1.00, reflecting the effectiveness of strategic initiatives and the creation of a supportive learning environment. This sustained progress suggests a strong and resilient outlook for accountancy education at the school.

Umbwe Secondary School

Umbwe Secondary School has also grappled with high failure rates in BAM over the years. In 2017, the failure rate stood at 69%, indicating that the majority of students struggled to pass. A slight improvement was observed in 2018, with the failure rate dropping to 68%. However, it was not until 2024 that a significant reduction occurred, with the failure rate falling to 34%. This substantial improvement points to the possible impact of targeted interventions and changes implemented during this period. These results highlight the ongoing need to understand and address the factors contributing to variations in student performance.

In contrast, the pass rates in Accountancy at Umbwe Secondary School have been exceptionally strong, achieving a perfect score of 1.00 from 2023 onwards. This level of performance underscores the reliability and effectiveness of the teaching methods and the consistent effort of both students and faculty, establishing a benchmark for future achievement.

Usangi Day Secondary School

Usangi Day Secondary School has demonstrated an impressive track record in BAM, with exceptionally low failure rates over the years. Notably, there were no recorded failures in both 2017 and 2019, maintaining a 0% failure rate in those years. Even in 2023, when a slight increase was observed, the failure rate remained relatively low at 7%. This consistent performance underscores the reliability and effectiveness of the BAM program at Usangi Day.

Similarly, the Accountancy subject at Usangi Day Secondary School has maintained a perfect 100% pass rate year after year. This outstanding accomplishment reflects the steadfast commitment and collaborative efforts of students and teachers, as well as the high standards set for academic performance.

Weruweru Secondary School

Weruweru Secondary School has also experienced a substantial transformation in BAM outcomes. In 2017, the failure rate was a concerning 37%, indicating notable challenges in the subject. However, through focused reforms and strategic efforts, the failure rate was impressively reduced to just 3% by 2023. This remarkable improvement highlights the success of targeted interventions and signals a promising future for mathematics education at Weruweru.

Accountancy performance at Weruweru has been equally extraordinary, with pass rates consistently reaching the highest level—a perfect score of 1.00 in recent years. This exemplary achievement is a testament to the robustness of the curriculum, the quality of teaching, and the dedication of students and staff.

Key Observations and Trends

A review of the data reveals that BAM, despite being an important subject for students in science, commerce, and related fields, continues to have higher failure rates compared to Accountancy. This pattern suggests that students may find the mathematical concepts and applications in BAM more challenging. Nevertheless, schools such as Usangi Day and Weruweru have achieved exceptional progress, maintaining consistently low failure rates through effective teaching strategies and support systems. Their commitment to fostering mathematical understanding sets a standard for other schools facing similar challenges.

Conversely, Accountancy has seen consistently high pass rates across multiple schools, with some institutions achieving perfect pass rates year after year. This trend suggests that students are generally better prepared for Accountancy examinations, likely due to effective instructional methods and supportive learning environments. The contrast in outcomes between BAM and Accountancy reinforces the perception that Accountancy provides a more accessible and successful academic path for many students.

4.2 Discussion on Several Factors emerge from the Data

Performance Disparities

Umbwe Secondary School faced significant challenges in the subject of Basic Applied Mathematics (BAM), which appeared to arise from a combination of inadequate resources and less effective teaching methods (Haji, 2024). Students struggled to grasp fundamental concepts, often due to a lack of access to updated textbooks, learning materials, and technology that could enhance their understanding. Additionally, teaching strategies employed may not have catered to diverse learning styles, leaving some students behind (Cardino & Ortega-Dela Cruz, 2020). This situation contributed to a palpable atmosphere of frustration among both students and teachers, making it difficult for learners to build a strong mathematical foundation essential for their future academic pursuits.

Mathematics Proficiency as a Key Indicator

Gumapac et al. (2024) found that math capability, particularly in computation and estimation, may be a key indicator of success in math and related fields like accounting. Educators ought to focus on creating effective teaching



methodologies to improve science instruction, which can, in turn, make strides in students' execution in accounting and other numerically demanding subjects.

School-Specific Trends

Usangi Day Secondary School achieved outstanding results in both subjects, indicating a strong and effective support system dedicated to nurturing student success. The school's commitment to providing resources, personalized guidance, and encouragement has fostered an environment where students can thrive academically, in line with the study by Huot et al. (2024). This impressive performance reflects not only the hard work of the students but also the dedication of the teachers and staff in ensuring that each student receives the support they need to excel.

4.3 Correlation Analysis

Four advanced-level secondary schools' pass rate trends for the subjects of accounting (AC) and Basic Applied Mathematics (BAM) were examined using the correlation table below:-

Table 2
Correlation Analysis

| | <i>Fail in Bam</i> | <i>Pass in Accountancy</i> | <i>% rate failure BAM</i> | <i>% rate pass AC</i> |
|---------------------|--------------------|----------------------------|---------------------------|-----------------------|
| Fail in Bam | 1 | | | |
| Pass in Accountancy | 0.737 | 1 | | |
| % rate failure BAM | 0.728 | 0.326 | 1 | |
| % rate pass AC | -0.456 | -0.102 | -0.585 | 1 |

An engrossing pattern unfolds in examining the relationship between achievement in Accountancy and Basic Applied Mathematics (BAM). The data reveal a compelling inverse connection, with a correlation coefficient of $r = 0.737$. In secondary schools where Basic Applied Mathematics receives more emphasis, more students tend to excel in Accountancy, which suggests a positive correlation. This trend reflects how the prioritization of certain subjects can influence academic outcomes, highlighting the diverse factors that contribute to students' success across different disciplines.

Considering BAM failure rates against the failure rate as a percentage ($r = 0.723$), it is evident that a strong positive correlation exists. As the failure rates in the BAM program increase, there is a corresponding rise in the overall percentage of students who do not complete BAM assessments. This suggests that a higher incidence of BAM failures within the program is directly related to a larger number of pupils struggling to achieve passing results, underscoring a concerning trend in student performance and the effectiveness of the educational framework.

When analyzing the BAM failure rate versus the Accounting passing percentage ($r = -0.456$), schools that exhibit higher rates of failure in BAM often show lower pass rates in Accountancy. This negative association suggests that a broad spectrum of academic challenges faced by students may significantly impair their performance in both subjects. It highlights the possibility that difficulties in foundational skills or overall academic preparedness could hinder students' ability to succeed, indicating a need for targeted interventions to promote better educational outcomes across the board.

Some overlap is shown by a weaker positive correlation in this context. The data reveal an intriguing pattern, albeit a weak one, regarding student performance in Accountancy relative to the failure rates in the Business Administration and Management (BAM) program. Specifically, the correlation coefficient between BAM failure rates and the percentage of students passing Accountancy stands at 0.325. This suggests that as failure rates in BAM rise, there is a slight tendency for more students to succeed in passing their accounting courses. While this correlation is not strong enough to establish a definitive relationship, it does imply a minor trend worth further exploration.

Regarding the pass rate in Accountancy ($r = -0.102$) versus the percentage rate of passing Accountancy, there exists a fragile link between higher accounting pass rates and overall pass rates, as shown by a notably weak negative correlation. This suggests that while there may be some tendency for increased accounting pass rates to coincide with fewer successful outcomes in other subject areas, the connection is not robust enough to draw significant conclusions. Essentially, various factors could influence passing rates independently.

Finally, examining the BAM failure rate as a percentage of the Accountancy pass rate ($r = -0.585$), the data reveal an intriguing trend regarding student performance in both subjects (Reusser, 2000). The significantly negative correlation indicates that as failure rates for BAM increase, pass rates in Accountancy tend to decline. This implies that students struggling in BAM may also face challenges in grasping the concepts required to succeed in Accountancy. Moreover, a broader analysis shows that schools achieving higher pass rates in Accountancy often exhibit exceptional performance in BAM as well. This trend indicates a positive relationship between the skill sets and knowledge required



for both subjects, suggesting that competencies developed in one area may substantially benefit performance in the other. Schools fostering a strong foundation in either discipline appear to create an environment where success in both Accountancy and BAM is more likely, reflecting the interconnected nature of these fields in the academic landscape.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

To solve deficiencies in Basic Applied Mathematics (BAM), and capitalize on strengths in accounting, the study highlighted the necessity of focused interventions. By recognizing the links between these topics, teachers may create well-rounded lesson plans that enhance performance in both domains. The enormous class sizes, which restrict individualized attention and instruction, are a major contributing reason to the high failure rates in BAM. Classrooms that are too crowded can impede effective learning by decreasing student interest and comprehension. Schools can address these issues by implementing strategies like more specialized tutoring, smaller class sizes, and improved instructional materials. Better performance results from improved student-teacher contact, which is essential for cementing mathematical concepts. Additionally, by incorporating data-driven tactics, learning experiences may be tailored to the needs of each learner. The study's conclusions provide insightful information for developing curricula and modifying educational policies. In the end, creating a more encouraging learning atmosphere will increase accounting success and close disparities in BAM proficiency.

Involving students in Mathematics from the early stages of their education, particularly at the primary level, is vital for cultivating a favorable attitude towards subjects that require calculations, including Economics, Accountancy, and various Business fields. By highlighting the significance of Mathematics, parents can significantly influence their children's motivation to grasp this essential subject. Parents must convey that Mathematics is not merely a fundamental academic element but also a skill that is indispensable for daily life and financial literacy. A deficiency in mathematical comprehension within families can result in difficulties in areas such as budgeting and financial management, emphasizing the necessity for early and continuous engagement with Mathematics.

Parents ought to refrain from revealing their own weaknesses to their children, particularly regarding their past struggles with Mathematics in school. Instead, they should motivate their children by conveying that they excelled in Mathematics, but opportunities to advance to higher levels were limited. This approach will help students understand that they are not exerting enough effort and must strive to enhance their life skills for a better future.

Parents ought to frequently visit the educational institutions their children attend to participate in discussions, examine academic reports, and observe the overall conduct of students. These regular visits can inspire students in their educational journeys; however, this practice must be approached with prudence and consideration. In particular, parents should avoid offering rewards to the students they visit, as this could unintentionally demotivate those who are not visited. By following this guideline, the overall learning environment will continue to be inclusive and supportive for every student.

The government must focus on enhancing teacher capacity through specific interventions to improve the quality of Basic Applied Mathematics education at the advanced secondary level. This involves offering ongoing professional development programs for Basic Applied Mathematics educators to refine their pedagogical skills and promote increased engagement in the teaching and learning process. These initiatives not only boost instructional effectiveness but also nurture a lasting interest among teachers. Additionally, the government should proactively seek to recruit qualified professionals with expertise in Basic Applied Mathematics to guarantee subject mastery and academic excellence.

5.2 Recommendations

To enhance instructional quality and foster engaging learning environments, it is essential for BAM (Basic Applied Mathematics) educators to engage in new training programs. These programs aim to furnish educators with sophisticated educational strategies and an enhanced comprehension of the subject matter. The educational experience can be augmented by the utilisation of contemporary learning resources, including visually stimulating textbooks and graphical teaching aids. The integration of technology, including tablets and educational software, enhances the development of students' mathematical skills in a creative and efficient way.

Fostering a culture of information exchange among high-achieving schools can markedly enhance educational performance. Collaboration facilitates the interchange of ideas and techniques among educators, resulting in the implementation of excellent teaching practices. The creation of a specialised resource centre for mathematics educators would promote continuous discourse regarding curricular enhancements and pedagogical methods, thus fostering a conducive atmosphere for professional advancement and development.

Acknowledging and rewarding students for both their academic accomplishments and their efforts is crucial for fostering a genuine interest in learning. Recognising both achievements and efforts enhances student motivation and

cultivates a favourable disposition towards maths. Establishing stimulating and interactive educational settings is essential for sustaining student motivation. This can be accomplished via collaborative group discussions, engaging educational games, and multimedia resources—such as movies and interactive simulations—that accommodate diverse learning styles. By synthesising various methodologies, educators can enhance the dynamism and attraction of the teaching and learning process.

Enhancing the teaching and learning processes in advanced-level secondary schools, especially in Tanzania, necessitates augmented finance and efficient educational strategies. Engagement with stakeholders, especially non-governmental organisations, can facilitate the closure of resource deficiencies and furnish critical training and materials. Such collaborations guarantee that education is rendered more stimulating and rewarding for all pupils.

Encouraging engagement in creative, athletic, and student club activities can enrich the BAM curriculum by cultivating abilities such as creativity, leadership, and collaboration. Specialised programs that emphasise the practical applications of mathematics enhance students' comprehension of its importance and motivate them to investigate prospective career opportunities. Ultimately, these activities equip students for diverse professional options and foster their comprehensive growth.

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