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POOR PERFORMANCE IN MATHEMATICS AMONG SENIOR SECONDARY SCHOOL STUDENTS: LESSONS FOR EDUCATION PLANNERS AND PARENTS

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Abstract: -

Education is one of the best tools to transform lives and living conditions especially with science and technology. Over the years, governments and families have been trying to ensure children access quality, relevant; and affordable education. In the areas of science and technology particularly at tertiary level, possessing strong mathematical knowledge and skills is a must. However, though the precise number is yet to be documented, children have been woefully failing the subject causing fears and panics in the general population more especially in the parents and government authorities as the future of development seemingly anchored on science and its applications. The fundamental rationale for the systematic review was to examine the causes of poor performance in mathematics among senior secondary school students.

In summation, the study revealed that the causes of poor performance in mathematics among senior secondary school students are multifaceted and include causes located in personal status, erroneous beliefs, students, teachers, teaching methods, language competence, teaching and learning materials, parents and family members, schools, policies, society, infrastructures; and government

To conclude, the poor performance in mathematics among senior secondary school students is negatively impacting their access to tertiary institutions for higher education in order to effectively take part in future national developments and worse of all, pushing them to commit crimes as they cannot secure jobs in the highly competitive job market.

Keywords: *poor performance, mathematics, students, senior secondary schools*

INTRODUCTION

Education since the creation of man has been one of the most important assets for him in terms of transforming his life and that of the entire society in addition to its being a fundamental human rights and seemingly, the exercise of all other rights anchor on it(Alami, 2016). Thus, it is an inalienable right as enshrined in many international conventions including the universal declaration of human rights of 1947(Wekesa, 2013).

Education in most communities especially in underdeveloped world is the principal source and weapon for the liberation of human kind in many respects such as socializing people to realize their potentials, rights; and responsibilities to be able to work with others for national development and above all, to liberate them from foreign bondage(Ephantus, 2014). The strong desires for household improvement is rapidly attained through education as with education, people can steadily and safely eradicate poverty and most importantly, the application of modern scientific discoveries to rapidly transform communities, largely depend on the level and quality of education citizens acquired (World Bank Development Report, 1993) and (Wekesa, 2013). In the modern world, education is one of the critical vehicles for the realization of individual and national potentials, consciousness, promotion of unison, economic, political, scientific, technological, cultural development; and the integration of nations(Afe,2012) and (Varaidzaimakondo & Makondo, 2020). For people and communities to develop and progress in all aspects of life, education is a must as it is one of the fundamental means of economic, political, social; and psychological development of individual and communities(Owan, 2018).

In view of the above, the biggest gift a parent can give to a child is education as with education, s/he will be able to create wealth, life better lives; and be able to positively contribute in national development endeavors(Upali, 2013). Therefore, success in education is critical in the life of any child, however, series of factors hinder it leaving many distress and near-futureless(Banerjee, 2016).

Mathematical knowledge and skills has always been recognized as a fundamental prerequisite to enter universities and other higher learning institutions for the undeniable fact that it is widely applied in most disciplines. Essentially, all students will need mathematical knowledge to develop their analytical and computation skills(Syazana Awaludin, Ab Razak, Azliana Aridi, & Selamat, 2015). Mathematics, in addition to being the bedrock and indispensable tool for scientific, socio-economic; and political development of people and nations, it provides the strongest mode of constructing mental disciplines, encourages logical reasoning, mold people for the future challenges, etc. in view of it being that critical human organ that thinks and apply logic to understand human kind and his environment(Lynn & Bracad, 2009 & Skem, 2008); (Varaidzaimakondo & Makondo, 2020). In many countries in the world including developing ones, mathematics is a compulsory subject for admission into tertiary institutions as well as appointment into certain positions especially in the civil services(Varaidzaimakondo & Makondo, 2020). Therefore, getting good grade in mathematic is crucial for students wishing to enter universities as it is a strong pre-requisite especially those who want to pursue degree program in STEM and those who want to work in research and development areas including science and technology(Banerjee, 2016).

However, in spite of these critical roles mathematics plays in individuals and national developments endeavors, students continue to find it hard to secured even a gentleman pass and worse of all, majority failed it woefully in national and international examinations(Mateya, Utete, & Ilukena, 2016). In most nations especially in West Africa, the annual release of West African Senior School Certificate Examination is never a pleasant moment since in most cases if not in all cases, the results are far below the expectations of the public, the investment of both the states and parents; and because of this sadness stakeholders keep constantly interrogating themselves as to why the education system cannot meet the expectations of the children, families; and the society at large(Ogundel, 2014). Therefore, failure of any subject especially mathematics and English language can be very stressful to both parents and students as it lower down the self-esteem of students and above all deny them entering universities in some countries(Alami, 2016).

Aims and Methodology

AIMS

The fundamental rationale for the literature review was to examine the present scale and degree of the causes of poor performance in mathematics among senior secondary school students, share knowledge to spark and inspire a process that will usher rapid growth from all directions in the fight against the menace.

Methodology

A systematic review of the literatures using information collected from different sources was actuated. Google search engine, google scholar, web of science; and scopus database were used to search for these articles. During the search numeration combinations of words and phrases were used to ensure articles reflect the most recent knowledge and scholarly works. The systematic searches beget varied and voluminous articles which had to be sieved not only to meet the inclusion and exclusion criteria but to ensure the fundamental objectives of the study are wrangled.

Therefore, only peer-reviewed scholarly publications published after 2000 were selected except extracts perceived to be of basal mileage to the study. However, articles published by staunch international organizations known to have been working in education for years and has produced indefatigable knowledge in accessible, quality, affordable; and

relevant education were stealthily appraised.

Inclusion and Exclusion Procedures

The underneath procedures were followed in articles inclusion. That is, only:

1. Peer-reviewed scholarly articles.
2. Peer-reviewed scholarly articles on the causes of children failing terminal mathematics examinations.
3. Peer-reviewed scholarly articles published from 2000 to 2020.
4. Articles on international or regional perspectives on the causes of poor performance in mathematics among senior secondary school students.
5. Articles on the causes of poor performance in mathematics among senior secondary school students published by internationals organizations with years of meritorious experiences in education.

To exclude some articles from the review, the below captioned criteria were applied. That is:

1. Non-peer reviewed articles.
2. Articles published before 2000 unless critical and impactful.
3. Media generated articles including newspapers.
4. Articles not published in English language.

In spite of the fact that both qualitative and quantitative articles were trawled, only 46(forty six) articles out of 305 (three hundred and five) were qualified for reviewed which is largely due to a dearth of data. In essence, only peer-reviewed articles and publications by international organizations considered being trustworthy because they occasioned standard, ethical and robust studies were reviewed.

Discussions

The literature review has unearthed a wide range of causes for students underperforming in mathematics. To discuss these causes, they are categorized into: causes located in personal status, erroneous beliefs, students, teachers, teaching methods, language competence, teaching and learning materials, parents and family members, schools, policies, society, infrastructures; and government.

Causes Located in Personal Status

The status of a person ranging from his or her biological sex to his or social standing in the community is very critical as to a very large degree it determines his or her overall success in life especially in this modern world fully overloaded with hurdles. Some hurdles may lie in the biological makeup of a person while some are cultural in nature(Toren & Moore, 1998). In the academic arena like most arenas status being biological or socio-economical has greatly influenced the success and failure of some including students excelling in their mathematics as collaborated: students failing mathematics is attributable to many factors such as their socio-economic status, gender, prior mathematical achievements, parents and peer influence, classroom composition; and students' perception towards the subject(Kiwanuka, Van Damme, Van Den Noortgate, Anumendem, & Namusisi, 2015). The causes of mathematics failure include students' educational background, race, age; and their valuing of the importance of the subject(Syazana Awaludin et al., 2015). Age is a critical contributing factor in students failing mathematics as the older the person is the more his or her ability to understand rigorous mathematical techniques decreases nevertheless learning from mistakes can be helpful in comprehending certain techniques including those of mathematics(Syazana Awaludin et al., 2015). All types of adversities in the education system are encountered by children of ethnic minorities, refugee/asylum seekers; and immigrants profoundly affecting their excelling in educational attainments (OECD, 2016 & Strand, 2014) and (Banerjee, 2016).

Causes Located In Erroneous Beliefs

Human beings since creation have always developed some kind of beliefs toward things including themselves and the society in general. These beliefs can sometimes be evidence based or totally erroneous. Notwithstanding, whatever the type, it is known to have influenced mankind in several ways including his or her socio-economic, political success; and his or her life style(Razza & Blair, 2009). Academically, beliefs including believed in oneself has made some to excel so too it is with unprecedented failures due to erroneous ones as supported: students performing poorly in mathematics examination is attributable to many factors such as students' negative attitudes towards the subject, anxiety and fear of the subject, inadequate qualified teachers, poor teaching methods, inadequate teaching and learning materials, lack of guidance and counselling services; and poorly furnished and overcrowded classes(Makhubele, Luneta, 2013). The erroneous belief that some are born with mathematics brain has occasioned lot of failures since most students would naïvely accept that they are not born with mathematics brains rather than putting more efforts to pass(Boaler, Dieckmann, Pérez-Núñez, Sun, & Williams, 2018). Students underachievement in mathematics can be attributed to poor teaching methods, teachers failing to motivate students to take the subject seriously; and also students' negative attitudes toward the course(Gegbe & Koroma, 2014). Students fearing mathematics has deterred them from practicing and as such they could hardly master or retain what is taught in class since they are not practicing it(Michael, 2015). Students failing mathematics is highly associated with mathematics anxiety which is caused by multitude of factors such as teachers, parents, boredom and learning difficulties, society, lack of adequate resources, test and examinations, lack of confidence; and the students themselves(Sule, 2018).

Similarly, students' lack of understanding that mathematics is a set of procedures instead of a single domain has contributed to their failure because this kind of thinking does not help in breaking the negative attitudes they have towards the subject and furthermore allows them explore other methods of learning the subject(Boaler et al., 2018). Students' mindset about mathematics is a key contributing factor to their failing it during examination(Boaler et al., 2018). Students failed mathematics because they believed it is naturally difficult causing them to fear the subject(Jameel & Ali, 2016). Students' believing that mathematics is not important in their future career is another factor to be blamed for the failures as the more a person values something the more s/he becomes motivated to pursue it with zeal and determination(Syazana Awaludin et al., 2015).

In additionally, mathematics anxiety is one of the key psychological factors associated with students' failures in mathematics(Syazana Awaludin et al., 2015). Some of the wrongly conceived demands of mathematics have not only led to students withdrawing from the course but has equally resulted in lot of failures due to anxiety, helplessness based on erroneous beliefs instead of viewing the demands being academic necessity(Chinn, 2012). Mathematics anxiety is a great causation of the failure of the subject as once a student is able to understand it, recognized it, controlled it; and be able to cope with it effectively, s/he can perform far more than expected(Siebers, Frederiksen, Gloeckner, & O'donnell-Allen, 2015)

Causes Located in Students

Success of any kind is a product of combined efforts either as a team or individuals. In this modern world, interdependence is a common characteristic of all communities and development endeavors. Therefore, for any meaningful success to be registered, all parties are expected to unreservedly give their best. However, the attainment of certain success requires one taking the ownership in spite of the needed collective efforts(Stenger, 2014). Thus, anything short of that could result in mass underachievement or failures even in academic qualification examinations in which students' commitments are central as qualified: another fundamental factor for students failing mathematics is their lack of adequate preparation before the start of classes, absenteeism, lateness; and the lack of enforcement of school policies that require serious participation in class(Kauffmann et al., 2011). Students' lack of confidence in themselves has also contributed in their failing mathematics since it makes them lazy to try even problems that even ordinary people are capable of solving(Mojeed, Adedeji, 2007). Students failed mathematics because of procrastination as the more and longer it is the more profound the failures become(Mojeed, Adedeji, 2007). Students lacking sustainable interest in the subject has equally contributed to the huge failure because it is only with interest among other things that they can nurture and develop the necessary skills to understand and solved mathematical problem(Jameel & Ali, 2016). Parents strongly believed that children are under performing mathematics because they do not pay attention while in class(Jameel & Ali, 2016).

Similarly, students' poor memory and the inability to make connection between what was learned and what they are being taught today has resulted in their failure since they could not built on period knowledge to excel in their examinations(Varaidzaimakondo & Makondo, 2020). Students' can be blamed for their failures because of not creating enough time for their books especially at home where they are expected to study at night to be well prepared for the next day(Alami, 2016). Students' absenteeism, lateness; and irregular class attendance are crucial factors that can be associated with the overall poor academic performance including mathematics because they are not always behind but worse of all, they are unable to catch up with previous lectures(Alami, 2016).

In the same vein, sometimes, students underperforming in mathematics resides in them because of their attitude toward the course and their lack of mastery of basic mathematics prerequisite skills(Wekesa, 2013). Students not reading textbooks, practicing what is taught in class has not only resulted in lack of comprehension of the subject but also not being fluent in English language to understand with ease examination questions(Mateya et al., 2016). Students failed mathematics because among other things they did not adequately master the most basic mathematical competencies during their lower grades(Mateya et al., 2016). Some children failed mathematics because of problems in understanding and representing numerical magnitude, recalling basic mathematics facts from their long-term memory, delay in learning mathematical procedures which has nothing to do with intelligence but rather working memory deficiency(Geary, 2011). Students failing mathematics can be attributed to parents, students, teachers, schools, the language of instruction, government; and the society among other things(Ogundel, 2014). The students-related factors have the highest negative impacts on students underachievement in mathematics while that of the teachers has the lowest negative impacts(Alami, 2016).

Causes Located in Teachers

In the delivery of quality, relevant; and affordable services highly trained, experienced; and motivated workforce is near indispensable(Sabir, 2017). Therefore, it shouldn't be astonishing to realize the rationale behind all conscious and development oriented governments and communities prioritizing workforce development. To be successful in delivering quality education, highly trained, experience; and motivated teachers is a must even in passing mathematics examinations as authenticated: the fact that mathematics teachers are hardly trained to update them academically especially on new pedagogical practices, students are more at risk of failing mathematics examinations(Nantomah, Polytechnic, Asampana, & Polytechnic, 2015). Teachers' lacking the required qualifications and experience has

significantly impacted students' performance in mathematics(Gegbe & Koroma, 2014). Lack of commitment by teachers have significantly contributed to the failures since students have to skip certain lessons and topics because they are far behind schedule due to teachers coming to class late or being absent altogether(Michael, 2015).

Similarly, the poor performance of students in mathematics is as result of a combination of many factors namely; teachers not actively listening to students, not encouraging them to build interest in the subject and try their best, not ensuring there is fun and support in class while providing challenging class environment that make all students eager to learn(Michael, 2015). Instructors teaching without using teaching aids that motivate students to develop interest in mathematics is attributable to students' poor performance in the subject(Sule, 2018). Teachers' lack of the required knowledge and skills to teach mathematics has significantly contributed to student underperforming during examinations(Jameel & Ali, 2016). The inability of some teachers to correctly apply teaching aids and practically demonstrate what they are teaching has not only resulted in lessons being boring but equally consolidated the negative attitudes students have toward the subject contributing to massive failures(Jameel & Ali, 2016). The poor performance of students in mathematics is mainly due to the strictness of teachers while teaching and lack of practice especially while at home(Jameel & Ali, 2016). Teachers' not being well versed in multiple teaching strategies that can be applied to suit students' intellectual levels and enhance the understanding of the subject has enormously contributed to underachievement in mathematics examinations (Syazana Awaludin et al., 2015). The poor performance of children in mathematics is closely linked with teachers' shallow level of class preparation, practice and methods of instruction, teachers' teaching experience, lack of adequate mathematics teachers, teaching without making the best use of teaching aids, teaching but not adequately examining take-home assignments, teachers lacking the prerequisite characteristics of an effective and efficient mathematics teacher, teachers' lacking interest in the teaching career, teachers being overloaded; and teachers' poor attitude toward mathematics (Wekesa, 2013).

Comparably, students are underperforming in mathematics examination due to many factors which include teachers not being highly trained and experienced, applying poor methods of teaching; and failing to effectively utilize instructional materials and teaching aids(Ojukwu, 2016). Teachers' lack of in-depth pedagogical knowledge, pedagogical content knowledge; and subject matter knowledge has greatly deterred their ability to apply different teaching methods to effectively deliver contributing hugely to students' underachievement in mathematics(Mateya et al., 2016). Teachers not seriously monitoring students' performance to identify those not performing well with the ultimate objective of providing the needed intervention like remedial classes has immensely contributed to students failing examinations(Sule, 2018). Teachers' not being well grounded in course content knowledge, lack of the required skills to teach mathematics; and not building on prior knowledge has greatly contributed to mathematical failures(Mateya et al., 2016). Teachers contribute to students' failure by skipping topics that they are not well versed in while concentrating more on those they know well even though may not be very relevant or may just be tiny fraction of the syllabus(Boaler et al., 2018). Lack of highly trained and experience mathematics teachers is a big contributing factor to students failing mathematics(Chukwuemeka & Chinedu, 2013). Mathematics failure is strongly linked to poor quality teachers who are not competence, adequately trained, lack dedication, academically and professionally poor(Ogundel, 2014). The strongest weakness of teachers resulting in mathematic failure is in the pedagogical knowledge which most teachers seem to lack and as such lack the required knowledge to teach mathematics(Ogundel, 2014).

Causes Located in Teaching Methods

To emerge successful, sometimes doesn't only depend on the knowledge possess but also the methods even in convincing people to join or not to join a particular undertaking including schools of thoughts(Lodorfos et al., 2015). Imparting knowledge more especially in a structured way doesn't only required possessing quality and relevant knowledge but mastering those effective and highly dividend paying instructional methods. Therefore, anything short of this, can profoundly affect teaching and learning sometimes not only resulting in students' not understanding the teachers but unprecedented failures in both putting into practice what is learned for communal benefit by solving problems and examination underachievement as endorsed: another critical factor that makes students perform poorly in mathematics include didactic one which is basically about the methods of instruction which sometimes are not appropriate and as such they inhibit students understanding of lessons(Makhubele, Luneta, 2013). Children failing mathematics is associated with many factors including content knowledge such as the type of mathematics learn, how it is taught; and disseminated to them(Ephantus, 2014). Students failing mathematics can be linked to factors such as teachers' teaching strategies, content knowledge, motivation, laboratory use; and non-completion of syllabus(Makgato & Mji, 2006). Equally important in the failure of students is the teachers applying teaching methods that are too cumbersome for students to follow especially when learning abstract theories without regular practice or exposure(Jameel & Ali, 2016).

In the same vein, one critical factors in students performing badly in mathematics include not comprehending the subject, lessons not being localized culturally, not attending classes regularly; and lack of internal desire to learn(Alami, 2016). Children's underperforming in mathematics is largely due to poor teaching methods, children negative attitude toward the subject and cognitive deficiency(Ephantus, 2014). Students' underachievement in mathematics is attributable to: teaching methodologies, students, teachers and parents' negative attitudes towards mathematics, lack of experience by some teachers, frequent transfer of teachers; and inadequate teaching resources(Varaidzaimakondo & Makondo, 2020).

Causes Located in Language Competence

Effective and efficient communication including teaching at any level requires lot of things not only knowing the subject matter, audiences but your audiences' mastery of the medium of communication or simply put the language otherwise one remains either not well understood or totally misunderstood(Abdulrahman & Ayyash, 2019). In the same vein, for students to excel in any subject including passing examinations, they must be competent in the medium of instructions as most examination questions are not only tricky but also ask for language competence for resounding achievements as validated: though not very serious in comparison to other factors, pedagogical factors do play some roles in students performing poor in mathematics examinations(Nantomah et al., 2015). Shortage of relevant and qualified teachers, inadequate teacher preparation, lack of disciplined, committed and morale teachers, medium of instruction being foreign, poor communication between key stakeholders including the families, communities, undisciplined, uncommitted students; and poorly managed teachers union are all potential blamable factors for the unprecedented failure in mathematics(Legotlo, Maaga, & Sebego, 2002). Critical in students underachievement in mathematics include lack of integration of problem solving skills and language knowledge in take home assignments that is expected to enhance their ability to solve future mathematical problems(Kauffmann et al., 2011). Attributable to students' mathematics underachievement is lack of parental support and the inadequate usage of the English language as the medium of instruction in class and examinations(Makgato & Mji, 2006).

Similarly, students' lack of adequate practice of the English language is a critical factor in their poor performance as without practice they can hardly widen their vocabulary to both understand written and spoken English and above all, practice is a pre-requisite to both understanding teachers and textbooks(Alami, 2016). Students' inability to read, comprehend; and interpret basic mathematical concepts has profoundly contributed towards their underachievement during examinations(Mateya et al., 2016). Students' poor language competence especially in reading and understanding English has also contributed to their failure since they neither speak nor write good English(Ogundel, 2014).

Causes Located in Teaching and Learning Materials

To make a breakthrough in any endeavor more especially the complex ones, one would need complex, sophisticated; and appropriate equipment and on time(Albay, 2019). To effectively impart knowledge and skills, teachers need appropriate and adequate teaching materials and so too is the students in terms of timely, appropriate; and adequate learning materials otherwise they are not only place at the risk of not understanding the topics discussed but equally failing their examinations as validated: Shield and Kelly (1999) as captured in NIED (2010) found the causes of mathematics failures in UK to include lack of learning support, poor training of mathematics teachers, shortage of instructional materials, non-mathematics teachers being allowed to teach the subject; and lack of syllabus completion(Sa'ad, Adamu, & M. Sadiq, 2014). The underperformance of students in mathematics can be associated with the unavailability of learning materials and lack of access to online materials(Kauffmann et al., 2011). One of the critical factors in students failing mathematics include but not limited to: inadequate teaching and learning materials, mathematics anxiety; and those frequent tests and examinations that accelerate students' anxiety(Sule, 2018). Lack of exposure to different learning materials including textbooks has not only strengthened the belief that mathematics is difficult but it has equally deprived students from being deeply engaged in it through practice by opting for other alternatives(Boaler et al., 2018). Students' lack of textbooks to both follow lessons and do their home has significantly contributed to their poor performance in mathematics(Varaidzaimakondo & Makondo, 2020).

Similarly, students' failing mathematics is attributable to factors such as inadequate instructional materials, parents poor socio-economic standing; and lack of highly trained and experienced teachers(Owan, 2018). The poor performance in mathematics can be attributed to understaffing, inadequate teaching and learning materials, lack of motivation, poor attitudes of teachers and students toward the subject; and retrogressive exercises(Mbugua, Kibet, Muthaa, & Nkonke, 2012).

Causes Located in Parents and Family Members

Human development is not only a process but a complex one influence by multiple factors that can either be social, economical; and political in nature. Socially, the family environment is one of the most critical influential factors(Stefanski, Valli, & Jacobson, 2016). To deliver quality social services including education to the citizenry, states and local government authorities would prefer to work in unison with all relevant stakeholders particularly the parents of the children vis-à-vis their complementary roles. Thus, for students to excel in their respectively subjects, parents' active participation is a must as uphold: the students' underperformance in mathematics is equally attributable to lack of parental support especially when doing home works which further justify the fact that home background and the value communities attached to a subject can substantially increase the rate of performance and passing(Jameel & Ali, 2016). The causes for students failing to perform well in mathematics can be classified into four critical macro factors namely; student-related factors, teacher-related factors, family-related factors; and others such as marriage, health problems, toxic friendships; and transportation problems(Alami, 2016). Low achievement in education including mathematics can be attributed to several factors including familial (i.e. teen mother, low maternal education), social (i.e. homelessness, maltreatment), school-related and biological (i.e. inadequate parental care, low birth weight, lead exposure, malnourishment); and risk experiences on both academic and behavioral outcomes (Rouse et al. 2011) as cited in (Banerjee, 2016).

Similarly, parents are linked to the failure of children because, they hardly supervise them to ensure home works are properly done, hardly they give them moral training, visit schools to see how their children are progressing with the ultimate objective of taking corrective measures in order for them to succeed academically(Ogundel, 2014). Parents' inability to provide the basic requisite such as breakfast, textbooks, other learning materials, family breakdown; and not interacting with teachers and attending Parent Teachers Association (PTA), has greatly contributed to students failing examinations(Ogundel, 2014). Poverty is a key factor in children performing poorly since the parents cannot afford the resources required to support them both financially and academically as they will be busy fending for the family(Banerjee, 2016).

Causes Located in Schools

To nurture children to become responsible adults in the future requires the creation of conducive environment in all relevant social institutions(Upali, 2013). Schools being one of the fundamental social institutions charged with the responsibilities of imparting knowledge deserve special attention if learning is to take place in the most comfortable and rewarding environment otherwise the purpose of going to school will be defeated as children will be failing massively as corroborated: the environment in which children find themselves including their homes and schools is significantly contributing to their underachievement in mathematics examinations(Nantomah et al., 2015). Students failing mathematics can be attributed to factors such as poor teaching environment, poorly managed and equipped mathematics departments, inadequate self-practice by students; and their poor background in mathematics(Michael, 2015). Another essential factor is, children not having solid foundation when in the junior secondary school and as a result, such neglect has resulted in their dismal poor performance at the senior secondary school(Makhubele, Luneta, 2013). Fundamental factor in children underperforming is the systemic factors which encompass school environment, administration and the general support available to students to enhance learning(Makhubele, Luneta, 2013).

Similarly, parents believed that children are failing mathematics because the school administrations has not given them adequate support and encouragement to overcome their negative perception about the subject and above all, they are not regularly given assignments to practice in order to enhance their key mathematical skills(Jameel & Ali, 2016). Students' underachievement in mathematics can be strongly associated with two fundamental factors namely; lack of positive and supportive environment in the school(Banerjee, 2016). Students failed mathematics because of poor learning environment, improper coordination of learning, lack of fair assessment that includes marking and returning of scripts to students to know their strength and weaknesses(Banerjee, 2016) Therefore, both the social and physical environment in which students find themselves have greatly influenced their poor academic performance(Gegbe & Koroma, 2014).

Causes Located in Policies

Predictability and consistency is a prerequisite in any partnership as it goes a long way in maintaining trust, confident; and the momentum required. For institutions to effectively and efficiently discharge their duties, they must be regulated either through policies or laws or a combination of both(Ierodiakonou & Stavrou, 2015). Schools in executing their mandates, they need functional policies otherwise they will not only fail tax payers but the children as authenticated: the fact that there is no frequent inter-school competition, no proper supervision and inspection of schools by the concern authorities plus parents lacking interest in their children's education, students are placed more at risk of underperforming during examinations(Sa'ad et al., 2014). In some instances, the failure in mathematics can be linked to the ways mathematics departments are managed especially when headmaster unilaterally decides to run them without involving the mathematics teachers(Michael, 2015). Critical factors in students performing badly in mathematics include not comprehending the subject, lessons not being localized culturally, not attending classes regularly; and lack of internal desire to learn(Alami, 2016). Mathematics being not well taught in laboratories like other subjects has significantly contributed to students failing it(Sule, 2018).

Causes Located in Society

For any activity either public or private to be successful, it must be valued and cherished by the society as it is the society that provides the very inputs and purchase the services or products for sustainability among other things. Therefore, it is the society that determines the needed services or products and in the same vein set the standards(Nichols & Taylor, 2018). Education though indispensable especially in this modern world, it is society that determines what is to be taught in schools and above all, its success dwells in it through participation and support provision as corroborated: the fact that students are regularly hearing mathematics is difficult especially from the teachers and members of the society, it has left them demotivated and above all, reduced their morality towards the subject(Michael, 2015). Society lack of provision of enough support and motivation for students to learn mathematics has significantly contributed to the unprecedented failures(Sule, 2018). Bakare (1994) as cited in Asikhia (2010) found that the causes of students failing mathematics can be put into four fundamental categories namely; those residing in the students (e.g. basic cognition skills, physical and health factors, psycho-emotional factors, lack of interest), those residing in the family (e.g. cognition stimulation or basic intuition, type of discipline at home, lack of role model and finance), those residing in the school (e.g. school location and physical buildings, interpersonal relationship among the staff); and those residing in the society (e.g. inconsistent education policies, under-funding of schools, poor leadership, job losses)(Sa'ad et al., 2014).

Causes Located in Infrastructures

The success of any endeavor whether national, regional, private or public requires adequate and appropriate infrastructures(Van Veenstra, Aagesen, Janssen, & Krogstie, 2012). For educational institutions to function effectively like all other institutes, they need to be well resourced with the basic infrastructures otherwise the delivering of quality, relevant; and affordable education becomes a dream putting the children at the risk of failing examinations and worse of all, learning nothing substantial as upheld: STAN (2002) as quoted in Ojimba (2012) revealed that the fundamental causes of mathematics failures include acute shortage of highly trained and experience teachers, teachers lacking mathematics content knowledge, overcrowded classrooms, students' negative attitude toward the subject, teachers' strong desire to finish teaching syllabus without students proper understanding of what is taught; and inadequate infrastructures including libraries and laboratories(Sa'ad et al., 2014). Infrastructural deficiency such as lack of or inadequate classroom, libraries; and lack of instructional materials play significant roles in students not performing well in mathematics examinations(Nantomah et al., 2015). Lack of resources in the form of textbooks, shortage of learning and teaching materials, lack of classrooms and/or overcrowded ones, ineffective instructional policies; and ineffective school policies can all be blamed for students' underperformance in mathematics(Legotlo et al., 2002). The students' poor performance in mathematics can be associated with series of factors including poor infrastructure, emotional difficulties; and poor mathematical background(Zakariya & Bamidele, 2016).

Similarly, power outage, congested classrooms; and too many social outings have significantly contributed to students failing mathematics(Zakariya & Bamidele, 2016). Poorly equipped libraries and lack of adequate mathematics textbooks have contributed to students underperforming since they cannot afford to do their assignments or practice what is taught in class(Michael, 2015). The poor equipment of mathematics departments have profoundly contributed to the failures since all the lectures are theoretical making it extremely difficult for students to comprehend what is being taught much more to apply it in solving mathematical problems(Michael, 2015). Students are failing mathematics for quite number of reasons including lack of well-equipped teaching laboratories and libraries, lack of adequate teaching and learning materials, lack of books that adequately cover the whole syllabus(Wekesa, 2013). Poorly resourced teachers and acute shortage of textbooks in libraries have greatly impacted the underachievement of students during examinations(Varaidzaimakondo & Makondo, 2020).

Causes Located in Government

One of the fundamental contracts citizens have signed with their governments is to improve their general wellbeing and properly manage the national resources in the best interest of all. To execute this contract, states have created different institutions. However, they can only live up to expectations if they well-resourced and monitored(Darkwah, Daniel, & Asumeng, 2018). Thus, anything short of that, these very institutions can be great causative agents of the failure of citizenry including students: Vudla (2012) attributed the profound failures in mathematics to shortage of well trained teachers, inadequate teaching facilities, lack of finance especially public schools to purchase necessary equipment, poor quality textbooks, large classes, poorly motivated teachers, lack of libraries and laboratories, poor activities supervisory coordination, civil services interference with the school system, incessant transfer of teachers and principals, automatic promotion of students, the negative role of public examination on the teaching and learning process; and inequality in education opportunities(Sa'ad et al., 2014). Inadequate government budgetary allocation can be attributed to students failing examination since the schools will continue to be poor resourced(Zakariya & Bamidele, 2016). Government has like other factors contributed in the massive failure of students because of poor salaries, poor working condition; and openly neglecting teachers' welfare which in addition has demotivated young graduates with update knowledge to join the profession(Ogundel, 2014). Educational deprivation or underperformance starts in the womb of the women recognizing the fact that free maternal and child health care is educationally imperative (Education for All, Global Monitoring Report, 2010) and (Banerjee, 2016).

Summary and conclusion

The causes of poor performance in mathematics among senior secondary school students are multifaceted and include causes located in personal status, erroneous beliefs, students, teachers, teaching methods, language competence, teaching and learning materials, parents and family members, schools, policies, society, infrastructures; and government. Therefore, resulting poor performance in mathematics is negatively impacting students' access to tertiary institutions for higher education in order to effectively take part in future national developments and worse of all pushing them to commit crimes as they cannot secure jobs in highly competitive job market.

Declaration of conflict of interest

I declare that there is no conflict of interest with respect to the study, authorship and/or publication of the manuscript.

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Ethics Approval

Ethics approval was not necessary for a study of this nature and scope.

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